617.7.05

Gr272
24
Cop.2

DOMINA RERUM SAPIENTIA

Library
of the
Academy of Medicine,
Toronto.
11140
Presented by
R. A. Reeve Fund
1921

P Med

Vol. XXIV. 1915. New Series.

THE OPHTHALMIC RECORD

A Monthly Review of the Progress of Ophthalmology

406795
28.10.42

EDITED BY

CASEY A. WOOD, M. D.,
Chicago, Ill.
G. C. SAVAGE, M. D.,
Nashville, Tenn.
GEO. E. DE SCHWEINITZ, M. D.,
Philadelphia, Pa.
JOHN E. WEEKS, M. D.,
New York, N. Y.
EDWARD JACKSON, M. D.,
Denver, Colo.
H. V. WÜRDEMANN, M. D.,
Seattle, Wash.
W. E. HOPKINS, M. D.,
San Francisco, Cal.
HAROLD GIFFORD, M. D.,
Omaha, Neb.
FRANK ALLPORT, M. D., Chicago, Ill.

FRANK BRAWLEY, M. D.,
EDITORIAL SECRETARY,
7 West Madison Street, Chicago, Illinois.

COLLABORATORS.

Francis Valk, M. D.,
New York.
F. B. Eaton, M. D.,
Independence, Oregon
E. C. Ellett, M. D.,
Memphis, Tenn.
C. Devereux Marshall, F. R. C. S.,
London, England
W. Gordon M. Byers, M. D.,
Montreal, Canada
Emory Hill, M. D.,
Chicago
F. A. Davis, M. D.,
Denver, Colo.
Charles H. Beard, M. D.,
Chicago
Melville Black, M. D.,
Denver, Colo.
Robert L. Randolph, M. D.,
Baltimore, Md.
Edward Stieren, M. D.,
Pittsburgh, Pa.
Clarence A. Veasey, M. D.,
Spokane, Washington
E. A. Shumway, M. D.,
Philadelphia, Pa.
James W. Barrett, M. D.,
Melbourne, Australia
Frank C. Todd, M. D.,
Minneapolis, Minn.
Nelson Miles Black, M. D.,
Milwaukee, Wis.
Prof. Cirincione,
Rome, Italy

RE
1

INDEX TO VOLUME XXIV, NEW SERIES

JANUARY TO DECEMBER, 1915

CONTRIBUTORS TO VOLUME XXIV.

Adams, Eldridge, Chicago.
Allport, Frank, Chicago.
Alter, Francis W., Toledo, Ohio.

Black, Arthur D., Chicago.
Bradburne, A. A., Manchester, England.
Brawley, Frank, Chicago.
Brophy, John A., Philadelphia, Pa.
Bulson, Jr., Albert E., Fort Wayne, Indiana.
Burnham, G. Herbert, Toronto, Canada.

Calhoun, F. Phinizy, Atlanta, Ga.
Carpenter, E. R., El Paso, Texas.
Cates, Thomas H., Little Rock, Arkansas.
Chance, Burton, Philadelphia, Pa.
Clapp, C. A. Baltimore, Maryland.
Clark, C. F., Columbus, Ohio.
Crouch, J. F., Baltimore, Maryland.
Curtin, Thomas Hayes, New York City.

Davie, H. W., Reading, Pa.
Davis, A. Edward, New York City.
deSchweinitz, Geo. E., Philadelphia, Pa.
Downey, Jr., J. W., Baltimore, Maryland.
Durand, A. C., Ithaca, New York.
Dutrow, Howard V., Dayton, Ohio.

Elwood, Calvin R., Menominee, Michigan.

George, Edgar J., Chicago.
Gifford, Harold, Omaha, Nebraska.
Gradle, Harry S., Chicago.
Green, A. S., San Francisco, Cal.
Green, L. D., San Francisco, Cal.

Hansell, Howard F., Philadelphia, Pa.
Hardy, William F., St. Louis, Mo.
Holloway, T. B., Philadelphia, Pa.

Kollock, Charles W., Charleston, S. C.
Krauss, Frederick, Philadelphia, Pa.

Lamb, Robert Scott, Washington, D. C.
Lawrence, Granville, Philadelphia, Pa.
Lewis, Archibald Cary, Memphis, Tenn.

Maddox, Ernest E., Bournemouth, England.
Mason, Albert B., Waycross, Ga.
Mathewson, Geo. H. Montreal, Canada.
McCaw, John Alexander, Denver, Colorado.
McGuire, Hunter H., Winchester, Virginia.

Peter, Luther C., Philadelphia, Pa.
Portis, M. Milton, Chicago.
Posey, Wm. Campbell, Philadelphia, Pa.
Pratt, J. A., Aurora, Illinois.
Prentice, Charles F., New York City.
Prince, A. E., Springfield, Illinois.

Ramsay, A. Maitland, Glasgow, Scotland.
Randolph, Robert L., Baltimore, Maryland
Reber, Wendell, Philadelphia, Pa.

Shoemaker, William T., Philadelphia, Pa.
Shumway, Edward A., Philadelphia, Pa.
Small, Charles P., Chicago.
Smith, Henry, Armritsar, India.
Smith, Priestley, Birmingham, England.
Starr, Elmer G., Buffalo, N. Y.
Stieren, Edward, Pittsburgh, Pa.
Swift, George, Seattle, Wash.

Todd, Frank C., Minneapolis, Minn.

Vail, Derrick T., Cincinnati, Ohio.
Verhoeff, F. H., Boston, Mass.

Williams, Carl, Philadelphia, Pa.
Wipper, Otto, Chicago.
Wood, Casey A., Chicago.
Woods, Hiram, Baltimore, Maryland.
Würdemann, Harry V., Seattle, Wash.

1114-0

INDEX

A Page

Aberration; Spheric, The Importance of Its Correction in Applied Refraction. By Albert B. Mason, M. D., Waycross, Ga.. 12
Abscess, Homonymous Crescentic Scotomas in Association with Ethmoiditis and Tooth-Root. By Geo. E. de Schweinitz, M. D., Philadelphia, Pa... 163
Accident Which Caused the Loss of an Eye. An Account of an Unusual. By Charles W. Kollock, M. D., Charleston, S. C... 136
Acuity. A Plea for a More Uniform Reporting of Visual. By Harry S. Gradle, M. D., Chicago 297
Adams, Eldridge 581
Allport, Frank 502
Alter, Francis W. 447
Amblyopia and Its Relations to General Intoxication from Roasted Coffee Products. Coffee. By Casey A. Wood, M. D., Chicago, Illinois 122
Annular Opacity of the Lens, Following a Penetrating Wound into the Vitreous Chamber. By T. B. Holloway, M. D., Philadelphia, Pa. 404
Aphakia, Congenital. By William F. Hardy, M. D., St. Louis, Mo. 347
Aphakia With Micro-Cornea. Congenital. By Eldridge Adams, M. D., Chicago 581
Aqueoplasty; or the Zorab Operation for Glaucoma. By Casey A. Wood, M. D., Chicago 179
Astigmatism Following Injury. Another Case of Mixed Irregular. By Robert Scott Lamb, M. D., Washington, D. C......... 124
Astigmatism With the Rule. The Advantage of a Small Amount of. By Otto Wipper, M. D., Chicago. 296
Axial Optic Neuritis as an Early Symptom in Disseminated Sclerosis. Acute. By Edward A. Shumway, M. D., Philadelphia, Pa. 385

B

Bacterins. Gonorrheal Iritis as a Manifestation of an Old Latent Gonococcemia, Diagnosed by the Complement-Fixation Test —Treatment With. By Wendell Reber, M. D., and Granville Lawrence, M. D., Philadelphia, Pa. 1
Bi-lateral Subconjunctival Hemorrhage Apparently Due to Centrifugal Force. A Case of. By A. A. Bradburne, F. R. C. S., Manchester, England 355

Page

Birth Injuries of the Eye. By Charles P. Small, M. D., Chicago 396
Black, Arthur D. 610
Blindness Due to Sinus Obstruction With Recovery of Vision. Report of Three Cases of Monocular. By John A. Brophy, M. D., Philadelphia, Pa. 351
Book Notices 161, 276, 432
Bradburne, A. A. 355
Brawley, Frank 563
Brophy, John A. 351
Bulbar Neuritis. An Interesting Case of Acute Retro-. By Carl Williams, M. D., Philadelphia, Pa. 408
Bulson, Jr., Albert E. 72, 624
Burnham, G. Herbert 78, 516

C

Calhoun, F. Phinizy 455
Campimeter. A New Hand. By Luther C. Peter, M. D., Philadelphia, Pa. 331
Carpenter, E. R. 18
Cataract. Congenital. By C. F. Clark, M. D., Columbus, Ohio.. 109
Cataract Extraction. Operation and Cure. The Technique of Iridectomy and Its Performance as a Preliminary to. By Priestley Smith, F. R. C. S., Birmingham, England 120
Cataract Extraction. Some Unusual Features in a Case of Senile. By G. Herbert Burnham, M. D., Toronto, Canada...... 516
Cataract Incision Leaving an Undetached Conjunctival Flap With Bridge of Conjunctiva on the Temporal Side. By Frank C. Todd, M. D., Minneapolis, Minn. 401
Cataract in India. Progress in the Treatment of. By Lieut. Col. Henry Smith, V. H. S. Armritsar, India 449
Cataract Operation. A New Pair of Lid Retractors for the. By Derrick T. Vail, M. D., Cincinnati, Ohio 248
Cataract. Operation for Secondary. By A. S. Green, M. D., and L. D. Green, M. D., San Francisco, Calif. 580
Catarrh. Dionin in the Treatment of Vernal. By George Swift, M. D., Seattle, Wash........... 635
Cates, Thomas H. 244
Centrifugal Force. A Case of Bilateral Subconjunctival Hemorrhage Apparently Due to. By A. A. Bradburne, F. R. C. S., Manchester, England 355

Page

Chance, Burton 186

Chicago Clinics.............54, 108, 162, 330, 384, 438, 492, 546, 600, 654

Choroid. Scleral Puncture for Expulsive Sub-Choroidal Hemorrhage Following Sclerostomy—Scleral Puncture for Post-Operative Separation of the. By F. H. Verhoeff, M. D. Boston, Mass. 55

Ciliary Processes in the Pupillary Area. By C. A. Clapp, M. D., Baltimore, Maryland.......... 301

Clapp, C. A. 301, 501

Clark, C. F. 109

Coffee Amblyopia and Its Relations to General Intoxication from Roasted Coffee Products. By Casey A. Wood, M. D., Chicago, Illinois 122

Colloidal Theory of the Pathology of Glaucoma. The. By John Alexander McCaw, M. D., Denver, Colo. 284

Coloboma of the Iris. A Case of Complete Bilateral Iridiremia in a Child Whose Father has Bilateral. By Archibald Cary Lewis, M. D., Memphis, Tenn.. 134

Complement—Fixation Test-Treatment With Bacterins. Gonorrheal Iritis as a Manifestation of an Old Latent Gonococcemia, Diagnosed by the. By Wendell Reber, M. D., and Granville Lawrence, M. D., Philadelphia, Pa...................... 1

Congenital Aphakia. By William F. Hardy, M. D., St. Louis, Mo. 347

Congenital Aphakia With Micro-Cornea. By Eldridge Adams, M. D., Chicago 581

Congenital Cataract. By C. F. Clark, M. D., Columbus, Ohio.. 109

Conjunctiva. A Report of a Case. Melanosis of the. By Robert L. Randolph, M. D., Baltimore, Md. 20

Conjunctiva (Case Report). Hypertrophy of the. By William T. Shoemaker, M. D., Philadelphia, Pa. 340

Conjunctiva. Fibroma of the Orbit. Primary Syphilis of the. By Geo. H. Mathewson, M. D., Montreal, Canada............... 342

Conjunctival Flap With Bridge of Conjunctiva on the Temporal Side. A Cataract Incision Leaving an Undetached. By Frank C. Todd, M. D., Minneapolis, Minn. 401

Conjunctiva. Pemphigus of the. By Edward Stieren, M. D., Pittsburgh, Pa. 493

Page

Conjunctivitis. The Specific Treatment of Morax-Axenfeld. By Harry S. Gradle, M. D., Chicago 188

Contusion; Report of a Case With a Theory Relative to its Pathology. Anterior Lens-Ring Following. By Thomas H. Cates, M. D., Little Rock, Arkansas.. 244

Conus, Cured With the High-Frequency Spark. Kerato-. By E. R. Carpenter, M. D., El Paso, Texas 18

Cornea. Congenital Aphakia With Micro-. By Eldridge Adams, M. D., Chicago 581

Cornea, the Effect. Tonguing the Eye for Foreign Bodies, the Cause; Pneumococcus Ulceration of the. By H. V. Würdemann, M. D., Seattle, Wash. ... 129

Cornea, The Preventive and Curative Treatment of Pneumococcal Ulcer of the. By A. Maitland Ramsay, Glasgow, Scotland 439

Corneo-Scleral Trephining, Late Infection Following. By J. F. Crouch, M. D., and C. A. Clapp, M. D., Baltimore, Maryland ... 501

Correspondence 217

Crouch, J. F. 501

Curtin, Thomas Hayes 68

D

Dacryocystitis. A Method of Destroying the Lachrymal Sac in Chronic. By Harold Gifford, M. D., Omaha, Nebr. 22

Davie, H. W. 511

Davis, A. Edward 506

Dental Lesions. Ocular Diseases Resulting From. By Arthur D. Black, M. D., D. D. S., Chicago.. 610

Detachment. A Case of Retinal. By Thomas Hayes Curtin, M. D., New York City 68

de Schweinitz, Geo. E. 163, 601

Dionin in the Treatment of Vernal Catarrh. By George Swift, M. D., Seattle, Wash............... 635

Disc Associated With Vibration of an Overlying Membrane. Hole in the. By T. B. Holloway, M. D., Philadelphia, Pa.. 250

Downey, Jr., J. W. 635

Drainage from the Vitreous Chamber to Tenon's Lymph Channel for the Relief of Glaucoma. Retained Silk-Thread or "Seton." By Derrick T. Vail, M. D., Cincinnati, Ohio 184

Drainage of the Lachrymal Tract—A Simple Method. Intranasal. By J. A. Pratt, M. D., Aurora, Illinois 170

Page

Drainage of the Lachrymal Sac Into the Middle Meatus from the Standpoint of the Ophthalmologist. An Operation for the Direct. By A. E. Prince, M. D., Springfield, Illinois 414

Durand, A. C. 461

Dutrow, Howard V. 253

E

Electrolysis in the Treatment of Trachoma and Its Sequelae. By Edgar J. George, M. D., Chicago 130

Elwood, Calvin R. 469

Enophthalmos. A Case of Traumatic. By Howard F. Hansell, M. D., Philadelphia, Pa......... 240

Epibulbar Sarcoma. A Case of. By Howard F. Hansell, M. D., Philadelphia, Pa. 518

Ethmoidal Cells. Operation and Cure. A Report of an Unusually Large Mucocele of the Frontal and. By Wm. Campbell Posey, M. D., Philadelphia, Pa. 116

Ethmoiditis and Tooth-Root Abscess. Homonymous Crescentic Scotomas in Association With. By Geo. E. deSchweinitz, M. D., Philadelphia, Pa..... 163

Eye. An Account of an Unusual Accident Which Caused the Loss of an. By Charles W. Kollock, M. D., Charleston, S. C. 136

Eyeball. Conservative Treatment of Penetrating Wounds of the. By Albert E. Bulson, Jr., Fort Wayne, Indiana 72

Eye. Birth Injuries of the. By Charles P. Small, M. D., Chicago 396

Eye Protection for Grinders and Machinists. By H. W. Davie, Reading, Pa.................... 511

Eye Speculum. A New. By A. S. Green, M. D., and L. D. Green, M. D., San Francisco, Calif..... 65

Eye Speculum. The Green Elevating. (Addenda.) 136

F

Farmers. A Spectacle Frame for Tennis Players and. By Harold Gifford, M. D., Omaha, Nebraska 81

Fibroma of the Orbit. Primary Syphilis of the Conjunctiva. By Geo. F. Mathewson, M. D., Montreal, Canada 342

Field. An Improved Hatpin for the Visual. By Ernest E. Maddox, M. D., London, England 304

Foreign Body Which had Been in the Eye Nearly Four Months. An Unusually Happy Result Following the Removal of an Intra-Ocular. By Calvin R. Elwood, M. D., Menominee, Michigan........ 469

Page

Focal Infections in Their Relation to Certain Disorders of the Uveal Tract. Concerning. By Geo. E. de Schweinitz, M. D., Philadelphia, Pa. 601

Foreign Bodies, the Cause; Pneumococcus Ulceration of the Cornea, the Effect. Tonguing the Eye for. By H. V. Würdemann, M. D., Seattle, Wash. 129

Foreign Body Located in the Lens. Report of a Case of a. By Francis W. Alter, M. D., Toledo, Ohio 447

Frontal and Ethmoidal Cells. Operation and Cure. A Report of an Unusually Large Mucocele of the. By Wm. Campbell Posey, M. D., Philadelphia, Pa. 116

Fundus Lesions in the Various Forms of Nephritis. The. By Albert E. Bulson, Jr., Fort Wayne, Indiana 624

G

Gastro-Intestinal Disorder. Ocular Phenomena Accompanying Three Cases of. By Hiram Woods, M. D., Baltimore, Maryland 547

George, Edgar J. 130

General Diseases in Their Relation to the Ocular Structures. A Method of Study of. By M. Milton Portis, M. D., Chicago.......... 622

General Disease to Ophthalmology. Recent Literature on the Relations of. By Charles P. Small, M. D., Chicago 575

Gifford, Harold..................22, 81

Glaucoma. A Preliminary Report. The Sclerocorneal Seton in the Treatment of. By Casey A. Wood, M. D., Chicago 235

Glaucoma. Aqueoplasty or the Zorab Operation for. By Casey A. Wood, M. D., Chicago 179

Glaucoma. The Colloidal Theory of the Pathology of. By John Alexander McCaw, M. D., Denver, Colorado 284

Glaucoma. The Operative Treatment of Acute. By G. Herbert Burnham, M. D., Toronto, Canada 78

Glaucoma Retained Silk-Thread or "Seton" Drainage From the Vitreous Chamber to Tenon's Lymph Channel for the Relief of. By Derrick T. Vail, Cincinnati, Ohio 184

Gonorrheal Iritis as a Manifestation of an Old Latent Gonococcemia, Diagnosed by the Complement—Fixation Test—Treatment With Bacterins. By Wendell Reber, M. D., and Granville Lawrence, M. D., Philadelphia, Pa... 1

Gonorrheal Iritis Following Traumatism. A Case of. By Robert Scott Lamb, M. D., Washington, D. C. 344

Page

Gradle, Harry S. 188, 297

Green, A. S. 65, 580

Green, L. D....................65, 580

H

Hansell, Howard F............240, 518

Hardy, William F. 347

Hatpin for the Visual Field. An Improved. By Ernest E. Maddox, M. D., Bournemouth, England 304

Hemorrhage Apparently Due to Centrifugal Force. Report of a Case of Bi-lateral Subconjunctival. By A. A. Bradburne, F. R. C. S., Manchester, England...... 355

Hemorrhage Following Sclerostomy —Scleral Puncture for Post-Operative Separation of the Choroid. Scleral Puncture for Expulsive Sub-Choroidal. By F. H. Verhoeff, M. D., Boston, Mass. 55

Heredity in the Development of Strabismus. The Influence of. By Wendell Reber, M. D., Philadelphia, Pa. 59

Heterophoria and Heterotropia, False. By Ernest E. Maddox, M. D., Bournemouth, England... 223

Heterotropia. False Heterophoria. By Ernest E. Maddox, M. D., Bournemouth, England 223

Holloway, T. B. 250, 404

Hole in the Disc Associated With Vibration of an Overlying Membrane. By T. B. Holloway, M. D., Philadelphia, Pa. 250

Homonymous Crescentic Scotomas in Association With Ethmoiditis and Tooth-Root Abscess. By Geo. E. deSchweinitz, M. D., Philadelphia, Pa. 163

Hydrophthalmos Following Trauma, Report of a Case. By Hunter H. McGuire, M. D., Winchester, Va. 127

Hypertrophy of the Conjunctiva (Report). By William T. Shoemaker, M. D., Philadelphia 340

I

India Progress in the Treatment of Cataract in. By Lieut. Col. Henry Smith, V. H. S., Armritsar, India 449

Infection Following Cornea-Scleral Trephining. Late. By J. F. Crouch, M. D., and C. A. Clapp, M. D., Baltimore, Maryland 501

Infections in Their Relation to Certain Disorders of the Uveal Tract. Concerning Focal. By Geo. E. de Schweinitz, M. D., Philadelphia, Pa. 601

Influenza. Iritis Due to. By Wendell Reber, M. D., Philadelphia, Pa. 559

Injuries of the Eye. By Charles P. Small, M. D., Chicago 396

Page

Injury. Another Case of Mixed Irregular Astigmatism Following. By Robert Scott Lamb, M. D., Washington, D. C. 124

Intoxication From Roasted Coffee Products. Coffee Amblyopia and Its Relations to General. By Casey A. Wood, M. D., Chicago, Illinois 122

Intranasal Drainage of the Lachrymal Tract. A Simple Method. By J. A. Pratt, M. D., Aurora, Illinois 170

Intra-Ocular Foreign Body Which had Been in the Eye Nearly Four Months. An Unusually Happy Result Following the Removal of an. By Calvin R. Elwood, M. D., Menominee, Michigan 469

Intra-Ocular Hemorrhage. Robert Scott Lamb 159

Iridectomy and Its Performance as a Preliminary to Cataract Extraction. Operation and Cure. The Technique of. By Priestley Smith, F. R. C. S., Birmingham, England 120

Iridiremia in a Child Whose Father has Bilateral Coloboma of the Iris. A Case of Complete Bilateral. By Archibald Cary Lewis, M. D., Memphis, Tenn. 134

Iris. A Case of Complete Bilateral Iridiremia in a Child Whose Father has Bilateral Coloboma of the. By Archibald Cary Lewis, M. D., Memphis, Tenn. 134

Iritis as a Manifestation of an Old Latent Gonococcemia, Diagnosed by the Complement—Fixation Test —Treatment With Bacterins. Gonorrheal. By Wendell Reber, M. D., and Granville Lawrence, M. D., Philadelphia, Pa. 1

Iritis Due to Influenza. By Wendell Reber, M. D., Philadelphia, Pa. 559

Iritis Following Traumatism. A Case of Gonorrheal. By Robert Scott Lamb, M. D., Washington, D. C. 344

K

Katrals. Wide-Aperture Lenses. Punktals and. By Charles F. Prentice, M. E., New York City.. 335

Kerato-Conus, Cured With the High-Frequency Spark. By E. R. Carpenter, M. D., El Paso, Texas. 18

Kollock, Charles W. 136

Krauss, Frederick 411

L

Lachrymal Sac in Chronic Dacryocystitis. A Method of Destroying the. By Harold Gifford, M. D., Omaha, Nebr. 22

Lamb, Robert Scott.......124, 159, 344

Lawrence, Granville 1

Page

Lachrymal Sac Into the Middle Meatus from the Standpoint of the Ophthalmologist. An Operation for the Direct Drainage of the. By A. E. Prince, M. D., Springfield, Illinois 414

Lachrymal Tract—A Simple Method. Intranasal Drainage of the. By J. A. Pratt, M. D., Aurora, Illinois 170

Lenses — Punktals and Katrals. Wide-Aperture. By Charles F. Prentice, M. E., New York City.. 335

Lens Following a Penetrating Wound Into the Vitreous Chamber. Annular Opacity of the. By T. B. Holloway, M. D., Philadelphia, Pa. 404

Lens Into the Anterior Chamber. Spontaneous Dislocation of a Sclerosed. By Frederick Krauss, M. D., Philadelphia, Pa........... 411

Lens, Report of a Case With a Foreign Body Located in the. By Francis W. Alter, M. D., Toledo, Ohio 447

Lens-Ring Following Contusion; Report of a Case With a Theory Relative to Its Pathology. Anterior. By Thomas H. Cates, M. D., Little Rock, Arkansas...... 244

Lewis, Archibald Cary 134

Lid Retractors for the Cataract Operation. A New Pair of. By Derrick T. Vail, M. D., Cincinnati, Ohio 248

M

Machinists. Eye Protection for Grinders and. By H. W. Davie, Reading, Pa. 511

Maddox, Ernest E. 223, 304

Mason, Albert B. 12

Mastoid Operation. A New Retractor for Extirpation of the Tear Sac Operation, External Frontal Sinus Operation and Infant. By Derrick T. Vail, M. D., Cincinnati, Ohio 346

Mathewson, Geo. E. 342

McCaw, John Alexander 284

McGuire, Hunter H.............. 127

Meatus From the Standpoint of the Ophthalmologist. An Operation for the Direct Drainage of the Lachrymal Sac Into the Middle. By A. E. Prince, M. D., Springfield, Illinois 414

Melanosis of the Conjunctiva. A Report of a Case. By Robert L. Randolph, M. D., Baltimore, Md. 20

Membrane. Hole in the Disc Associated With the Vibration of an Overlying. By T. B. Holloway, M. D., Philadelphia, Pa. 250

Mirror-Writing. The Report of a Case of. By F. Phinizy Calhoun, M. D., Atlanta, Ga. 455

Page

Molars. Report of a Case of Reflex Ocular Disturbance Due to Impacted Third. By Howard V. Dutrow, M. D., Dayton, Ohio... 253

Monocular Blindness Due to Sinus Obstruction With Recovery of Vision. Report of Three Cases of. By John A. Brophy, M. D., Philadelphia, Pa. 351

Morax-Axenfeld Conjunctivitis. The Specific Treatment of. By Harry S. Gradle, M. D., Chicago 188

Mucocele of the Frontal and Ethmoidal Cells. Operation and Cure. A Report of An Unusually Large. By Wm. Campbell Posey, M. D., Philadelphia, Pa. 116

N

Nasal Punch. A New. By A. E. Prince, M. D., Springfield, Illinois 634

Nephritis. The Fundus Lesions in the Various Forms of. By Albert E. Bulson, Jr., Fort Wayne, Indiana 624

Neuritis. An Interesting Case of Acute Retro-Bulbar. By Carl Williams, M. D., Philadelphia, Pa. 408

Neuritis as an Early Symptom in Disseminated Sclerosis. Acute Axial Optic. By Edward A. Shumway, M. D., Philadelphia, Pa. 385

News Items......51, 106, 160, 221, 275, 328, 381, 433, 488, 542, 596, 651

O

Obituary—

Mark Delimon Stevenson...... 430

Occipital Region with Involvement of the Visual Centers. Shrapnel Wound of the. By Casey A. Wood, M. D., Chicago 392

Ocular Diseases Resulting From Dental Lesions. By Arthur D. Black, M. D., D. D. S., Chicago... 610

Ocular Disturbances Due to Impacted Third Molars. Report of a Case of Reflex. By Howard V. Dutrow, M. D., Dayton, Ohio 253

Ocular Phenomena Accompanying Three Cases of Gastro-Intestinal Disorder. By Hiram Woods, M. D., Baltimore, Maryland 547

Ocular Structures. A Method of Study of General Diseases in their Relation to the. By M. Milton Portis, M. D., Chicago... 622

Ocular Tissues. The Consideration of Systemic Diseases Affecting the. By Frank Brawley, M. D., Chicago..... 563

Page

Ophthalmologist. An Operation for the Direct Drainage of the Lachrymal Sac into the Middle Meatus from the Standpoint of the. By A. E. Prince, M. D., Springfield, Illinois............ 414
Ophthalmology. Recent Literature on the Relations of General Diseases to. By Charles P. Small, M. D., Chicago......... 575
Ophthalmology. Salvarsan in. By Edward Stieren, M. D., Pittsburgh, Pa. 15
Orbit. Primary Syphilis of the Orbit—Fibroma of the. By Geo. F. Mathewson, M. D., Montreal, Canada............. 342

P

Pathology of Glaucoma. The Collodial Theory of the. By John Alexander McCaw, M. D., Denver, Colo. 284
Pemphigus of the Conjunctiva. By Edward Stieren, M. D., Pittsburgh, Pa. 493
Peter, Luther C. 331
Pigmentation" (Stephenson), Concerning Two Examples of a "Peculiar Form of Retinal. By Burton Chance, M. D., Philadelphia, Pa. 186
Portis, M. Milton............... 622
Posey, Wm. Campbell........... 116
Pneumococcal Ulcer of the Cornea. The Preventive and Curative Treatment of. By A. Maitland Ramsey, M. D., Glasgow, Scotland 439
Pneumococcus Ulceration of the Cornea, the Effect. Tonguing the Eye for Foreign Bodies, the Cause. By H. V. Würdemann, M. D., Seattle, Wash.......... 129
Post Graduate Teaching in India. 327
Pratt, J. A...................... 170
Prentice, Charles F...........277-335
Prince, A. E...................414-634
Priority in the Use of Bifocals in Strabismus 105
Protection for Grinders and Machinists, Eye. By H. W. Davie, Reading, Pa. 511
Punch. A New Nasal. By A. E. Prince, M. D., Springfield, Illinois 634
Puncture for Post-Operative Separation of the Choroid. Scleral Puncture for Expulsive Sub-Choroidal Hemorrhage Following Sclerostomy—Scleral. By F. H. Verhoeff, M. D., Boston, Mass. 55
Punktals and Katrals. Wide-Aperture Lenses. By Charles F. Prentice, M. E., New York City. 335

Page

Pupillary Area. Ciliary Processes in the. By C. A. Clapp, M. D., Baltimore, Maryland........... 301

R

Ramsay, A. Maitland............ 439
Randolph, Robert L., Baltimore, Md. 20
Reber, Wendell 1, 59, 559
Refraction and Their Average Frequency. Errors of. By A. C. Durand, M. D., Ithaca, N. Y. 461
Refraction in Its True Aspect. Vertex. By Charles F. Prentice, M. E., New York City.... 277
Refraction. Spheric Aberration; The Importance of Its Correction in Applied. By Albert B Mason, M. D., Waycross, Ga... 12
Retina After Twenty-Two Years' Duration. Report of a Case and Remarks. Spontaneous Reattachment of the. By A. Edward Davis, M. D., New York City 506
Retinal Detachment. A Case of. By Thomas Hayes Curtain, M. D., New York City............ 68
Retinal Pigmentation" (Stephenson). Concerning Two Examples of a "Peculiar Form of. By Burton Chance, M. D., Philadelphia, Pa................... 186
Retractor for Extirpation of the Tear Sac Operation. External Frontal Sinus Operation and Infant Mastoid Operation. A New. By Derrick T. Vail, M. D., Cincinnati, Ohio 346
Retractors for the Cataract Operation. A New Pair of Lid. By Derrick T. Vail, M. D., Cincinnati, Ohio 348

S

Salvarsan in Ophthalmology. By Edward Stieren, M. D., Pittsburgh, Pa. 15
Sarcoma, A Case of Epibulbar. By Howard F. Hansell, M. D., Philadelphia, Pa. 518
Scleral Puncture for Expulsive Sub-Choroidal Hemorrhage Following Sclerostomy — Scleral Puncture for Post-Operative Separation of the Choroid. By F. H. Verhoeff, M. D., Boston, Mass.. 55
Scleral Trephining. Late Infection Following Corneo-. By J. F. Crouch, M. D., and C. A. Clapp, M. D., Baltimore, Md. 501
Sclerocorneal Seton in the Treatment of Glaucoma. A Preliminary Report. The. By Casey A. Wood, M. D., Chicago........... 235

Page

Sclerosed Lens Into the Anterior Chamber. Spontaneous Dislocation of a. By Frederick Krauss, M. D., Philadelphia, Pa........... 411

Sclerosis. Acute Axial Optic Neuritis as an Early Symptom in Disseminated. By Edward A. Shumway, M. D., Philadelphia, Pa..... 385

Secondary Cataract. Operation for. By A. S. Green, M. D., and L. D. Green, M. D., San Francisco, Cal. 580

Scotomas in Association with Ethmoiditis and Tooth-Root Abscess. Homonymous Crescentic. By Geo. E. deSchweinitz, M. D., Philadelphia, Pa. 163

Senile Cataract Extraction. Some Unusual Features in a Case of a. By G. Herbert Burnham, M. D., Toronto, Canada 516

Seton Drainage from the Vitreous Chamber to Tenon's Lymph Channel for the Relief of Glaucoma. Retained Silk-Thread or. By Derrick T. Vail, M. D., Cincinnati, Ohio 184

Seton in the Treatment of Glaucoma. A Preliminary Report. The Sclerocorneal. By Casey A. Wood, M. D., Chicago......... 235

Shoemaker, William T............ 340

Shrapnel Wound of the Occipital Region with Involvement of the Visual Centers. By Casey A. Wood, M. D., Chicago......... 392

Shumway, Edward A............. 385

Silk-Thread or "Seton" Drainage from the Vitreous Chamber to Tenon's Lymph Channel for the Relief of Glaucoma. Retained. By Derrick T. Vail, M. D., Cincinnati, Ohio 184

Sinus Obstruction with Recovery of Vision. Report of Three Cases of Monocular Blindness Due to. By John A. Brophy, M. D., Philadelphia, Pa............. 351

Sinus Operation and Infant Mastoid Operation. A New Retractor for Extirpation of the Tear Sac Operation, Exterior Frontal. By Derrick T. Vail, M. D., Cincinnati, Ohio 346

Small, Charles P...............396, 575

Smith, Henry..................... 449

Smith, Priestley.................. 120

SOCIETY REPORTS.

Board of Examiners in Ophthalmology 646

Chicago Ophthalmological Society, October, 1914, 25—Nov., 1914, 147—Dec., 1914, 195—Feb., 1915, 358—March, 1915, 470—April, 1915, 479, 520—May, 1915, 586—Oct., 1915 637

Page

Colorado Ophthalmological Society, Oct., 1914, 101—Nov., 1914, 155—Dec., 1914, 207—Jan., 1915, 212—Feb., 1915, 272-309—March, 1915, 425—April, 1915, 419—May, 1915 539-593

Oxford Congress, The............. 486

Philadelphia Polyclinic Ophthalmic Society. Transactions of the. Nov., 1914, 95—Dec., 1914, 203—Jan., 1915, 268—Feb., 1915, 313—March, 1915, 525—April, 1915... 528

Pittsburgh Ophthalmological Society, Oct., 1914, 92—Jan., 1915, 265—Oct., 1915 646

Royal London Ophthalmic Hospital Clinical Meeting 377, 418

Royal Society of Medicine—Section of Ophthalmology, Nov., 1914, 98—Dec., 1914, 190—Feb., 1915, 214—March, 1915, 321—June, 1915.. 583

St. Louis Medical Society, Ophthalmic Section, May, 1914, 44-82—Oct., 1914 88

United Kingdom. Ophthalmological Society of the. Annual Congress 364

Wills Hospital Ophthalmic Society, May, 1914, 35—Oct., 1914, 138—Nov., Dec., 1914, 256—Jan., 1915, 305, 356—Feb., 1915, 323—March, 1915, 521—April, 1915, 533—May, 1915, 587.

Spark. A Case of Kerato-Conus, Cured With the High-Frequency. By E. R. Carpenter, El Paso, Texas 18

Spectacle Frame for Tennis Players and Farmers. By Harold Gifford, M. D., Omaha, Nebraska.. 81

Speculum. A New Eye. By A. S. Green, M. D., and L. D. Green, M. D., San Francisco, Cal...... 65

Speculum. The Green Elevating Eye (Addenda) 136

Spheric Aberration; The Importance of Its Correction in Applied Refraction. By Albert B. Mason, M. D., Waycross, Ga........ 12

Starr, Elmer G.................... 300

Stieren, Edward................15, 493

Strabismus. The Influence of Heredity in the Development of. By Wendell Reber, M. D., Philadelphia, Pa. 59

Subconjunctival Hemorrhage Apparently Due to Centrifugal Force. A Case of Bilateral. By A. A. Bradburne, F. R. C.S., Manchester, England 355

Swift, George..................... 635

Systemic Diseases Affecting the Ocular Tissues. The Consideration of. By Frank Brawley, M. D., Chicago 563

Page

Symblepharon. An Operation for the Prevention of. By Elmer G. Starr, M. D., Buffalo, N. Y. 300

Syphilis of the Conjunctiva—Fibroma of the Orbit. Primary. By Geo. H. Mathewson, M. D., Montreal, Canada 342

T

Tear Sac Operation, External Frontal Sinus Operation and Infant Mastoid Operation. A New Retractor for Extirpation of the. By Derrick T. Vail, M. D., Cincinnati, Ohio 346

Tennis Players and Farmers. A Spectacle Frame for. By Harold Gifford, M. D., Omaha, Nebr ... 81

Tenon's Lymph Channel for the Relief of Glaucoma. Retained Silk-Thread or "Seton" Drainage from the Vitreous Chamber to. By Derrick T. Vail, M. D., Cincinnati, Ohio 184

Tissues. The Consideration of Systemic Diseases Affecting the Ocular. By Frank Brawley, M. D., Chicago, Ill. 563

Todd, Frank C 401

Tonguing the Eye for Foreign Bodies, the Cause; Pneumococcus Ulceration of the Cornea, the Effect. By H. V. Würdemann, M. D., Seattle, Wash 129

Tooth-Root Abscess. Homonymous Crescentic Scotomas in Association with Ethmoiditis and. By Geo. E. de Schweinitz, M. D., Philadelphia, Pa. 163

Trachoma and Its Sequelæ. Electrolysis in the Treatment of. By Edgar J. George, M. D., Chicago 130

Trachoma. The Treatment of. By Frank Allport, M. D., Chicago .. 502

Trauma. A Report of a Case. Hydrophthalmos Following. By Hunter H. McGuire, M. D. Winchester, Va. 127

Traumatic Enophthalmos. A Case of. By Howard F. Hansell, M. D., Philadelphia, Pa 240

Traumatism. A Case of Gonorrheal Iritis Following. By Robert Scott Lamb, M. D., Washington, D. C. 344

Trephining. Late Infection Following Corneo-Scleral. By J. F. Crouch, M. D., and C. A. Clapp, M. D., Baltimore, Md 501

Trial Case Accessory, A. By J. W. Downey, Jr., M. D., Baltimore, Md. 635

U

Ulceration of the Cornea, the Effect. Tonguing the Eyes for Foreign Bodies, the Cause; Pneumococcus. By H. V. Würdemann, M. D., Seattle, Wash 129

Page

Ulcer of the Cornea. The Preventive and Curative Treatment of Pneumococcal. By A. Maitland Ramsay, M. D.. Glasgow, Scotland 439

Uveal Tract. Concerning Focal Infections in Their Relation to Certain Disorders of the. By Geo. E. deSchweinitz, M. D., Philadelphia, Pa. 601

V

Vail, Derrick T 184, 248, 346

Verhoeff, F. H 55

Vertex-Refraction in Its True Aspect. By Charles F. Prentice, M. E., New York City 277

Vision, Report of Three Cases of Monocular Blindness Due to Sinus Obstruction, With Recovery of. By John A. Brophy, M. D., Philadelphia, Pa. 351

Visual Acuity. A Plea for a More Uniform Reporting of. By Harry S. Gradle, M. D., Chicago 297

Visual Centers. Shrapnel Wound of the Occipital Region with Involvement of the. By Casey A. Wood, M. D., Chicago 392

Visual Field. An Improved Hatpin for. By Earnest E. Maddox, M. D., Bournemouth, England ... 304

Vitreous Chamber, Annular Opacity of the Lens, following a Penetrating Wound Into the. By T. B. Holloway, M. D., Philadelphia, Pa. 404

Vitreous Chamber to Tenon's Lymph Channel for the Relief of Glaucoma. Retained Silk-Thread or "Seton" Drainage from the. By Derrick T. Vail, M. D., Cincinnati, Ohio 184

W

Williams, Carl 408

Wipper, Otto 296

Wood, Casey A 122, 179, 235, 392

Woods, Hiram 547

Wound Into the Vitreous Chamber. Annular Opacity of the Lens Following a Penetrating. By T. B. Holloway, M. D., Philadelphia, Pa. 404

Wound of the Occipital Region With Involvement of the Visual Centers. Shrapnel. By Casey A. Wood, M. D., Chicago 392

Wounds of the Eyeball. Conservative Treatment of Penetrating. By Albert E. Bulson, Jr., Fort Wayne, Ind. 72

Writing. The Report of a Case of Mirror. By F. Phinizy Calhoun, M. D., Atlanta, Ga. 455

Würdemann, Harry V. 129

THE
OPHTHALMIC RECORD
A MONTHLY REVIEW OF THE PROGRESS
OF OPHTHALMOLOGY

Vol. XXIV CHICAGO, JANUARY, 1915 No. 1, New Series

ORIGINAL ARTICLES

GONORRHEAL IRITIS AS A MANIFESTATION OF AN OLD LATENT GONOCOCCEMIA, DIAGNOSED BY THE COMPLEMENT-FIXATION TEST —TREATMENT WITH BACTERINS.

BY
WENDELL REBER, M. D.
PHILADELPHIA, PA.
AND
GRANVILLE A. LAWRENCE, M. D.
PHILADELPHIA, PA.

The purpose of this communication is to recite the details of three cases in which iritis occurred as the manifestation of an old latent gonococcemia. In each case the etiologic diagnosis was not rested upon the clinical findings, which may often be misleading, but was firmly established on a scientific basis by the use of the complement-fixation test for Neisser's organism. The subsequent treatment with bacterins and serums was the logical sequitur and the results were prompt and gratifying beyond all our expectations.

Case No. 1.—X. Y. Z., male, aged 37, presented himself with the signs of a mild catarrhal ophthalmia in the left eye which had shown itself three days previously. He complained of the usual scratching and itching, and stated that he had been motoring the night before his ocular symptoms first appeared. The man was well built, in good health, and of good life habits. He had been married twelve years and was the father of two children who had always enjoyed perfect health.

On examination, the conjunctiva presented the injection characteristic of a corneal foreign body. None could be found, however. The pupil was 3 mm. in diameter and reacted promptly to light and accommodation. The eye grounds were normal save for some undue tortuosity of both the veins and the arteries. The left cornea appeared a little wavy, but not enough to interfere with the study of the fundus. A tentative diagnosis of traumatic conjunctivitis was made and suitable local treatment was ordered.

Two days later he returned, saying his eye had been better, but was quite red on arising this second morning. The conjunctival injection was deeper than before, but the pupil reacted promptly and the iris seemed normal. However, a drop of weak hyoscin solution was instilled and in half an hour the pupil had dilated fully. The next day there was some ciliary tenderness and injection and the pupil was down to 4 mm. Another drop of hyoscin solution again produced full dilatation, this time in about 15 minutes. Tension was minus one. Hyoscin was ordered for home use. The next day he returned with the pupil caught in two places, one corresponding to 2 o'clock on the clock dial and the other at 5. The iris was now filled in and a trifle discolored. At this consultation the patient denied ever having had lues, but stated that fifteen years previously he had had gonorrhea, for which he was treated until pronounced cured by his physician. Three years later he was married and he avers that he has never stepped outside his marital vows. He was perfectly frank in his denials and admissions and requested that we "go the limit" in finding the cause of his trouble. A prostatic smear was made by one of our genito-urinary surgeons and pronounced negative. A Wassermann reaction, a gonorrheal complement-fixation test and a urinalysis were then requested. Atropin and dionin were ordered for the eye.

The urinary report was negative, as was also the Wassermann. The complement-fixation test, however, was positive. Two days later he returned with the pupil still caught down and out (5 o'clock). He complained sorely of fifth nerve and intraocular pain, having lost two nights sleep on account of it.

The next morning he was given an injection of Neisser sero-bacterin (mixed) and within six hours the pain was gone and did not return. From this time onward the improvement was very rapid. The synechia which had failed to loosen under atropia gave way promptly. Within five days after the first bacterin treatment, the ciliary injection had entirely cleared away. In ten days the eye was quiet and normal, but as the complement-fixation test was still positive he was given another injection of Neisser sero-bacterin (mixed). The vision in the left eye returned to 5/5 and he was later refracted under a cycloplegic.

Case No. 2.—Male, 32, garage manager, single, was referred to us with a diagnosis of rheumatic conjunctivitis. For some years he had been the subject of a polyarthritis rheumatica and had had two previous attacks of iritis. Some days before we saw him he presented himself to his general medical adviser with what looked to him like rheumatic conjunctivitis. Knowing the patient's general condition, the physician placed him on massive salicylates with appropriate local treatment for the eye, and everything seemed to go well. Then, after exposure in a motor car when he was all in a perspiration, the patient's eye flared up into a typical iritis, at which time we saw him. Syphilis was vehemently denied, but he finally admitted having had gonorrhea five years previously. A urethral smear could not be obtained. However, a Wassermann and complement-fixation test were secured, the former being negative, the latter positive. In the meantime the orthodox local treatment had been prescribed for the eye. By the time the report on the complement-fixation test was received, the iritis had become florid and the patient was in extreme pain, averring that he had not had one hour's relief from pain for forty-eight hours. He was at once given an injection of Neisser sensitized bacterin (1 P. M.) and by 4 P. M. of the same day he was reported by his physician as absolutely free from pain. The next day he again exposed himself in a motor car and on the following day reappeared with some return of pain. The eye itself, however, was much quieter. Another injection of Neisser-bacterin was proposed, but the patient not only declined the treatment, but launched into such a volley of abuse that he was promptly discharged from observation. There could be no doubt, however, of the beneficial action of the bacterin in this case and if the patient had been willing to take one-half the care of himself that he should, we firmly believe that a prompt recovery would have ensued. The relief from pain in this case was compared by his general physician to that obtained by morphia hypodermatically.

Case No. 3.—Female, aged 56, married 36 years, three adult children and two grandchildren living and well. She had had two illnesses previously which were diagnosed as uremia, the last one two years before this report, which was said to have lasted seven weeks. Other previous history negative.

Present Illness.—After a long train ride sitting beside an open window, right eye became inflamed; two days later, left one involved. She had been under treatment for five weeks before we saw her. A tentative diagnosis of iritis due to infection by the nasal route had been made by a previous consultant. At this time she was on salicylates and mercury internally and atropin and dionin locally. Morphin subcutaneously every two or three hours, was being administered for her pain. When first seen the pupils were 3 mm. in diameter and firmly bound down. The ophthalmoscope showed small points of adhesion around the entire circumference of each pupil. The irides were dull and infiltrated, the pupillary third covered by a thin exudate. The tension was elevated. The pain was so intense that the morphia gave no relief, and she was delirious part of the time. The vision at this time amounted to hand movements at two feet. When we first saw the case we concurred in the view that the nasal passages might be the exciting factor, but we also urged the possibility of a gonococcal origin.

Urinalysis showed a trace of albumen, numerous pus cells and many casts. Total quantity in twenty-four hours, about fourteen ounces.

Her pain and mental symptoms varied in proportion to the rise and fall of the albumin, for which an examination was made daily. A sample of blood was submitted to the laboratory for examination with the following report: "The sample was tested against four organisms—gonococcus, two types of pneumococcus, and a streptococcus. In addition to this a Wassermann was made. All of these tests with the exception of the gonococcus were negative. To make sure, a control serum-antigonococcus was used and both the patient's serum and the antigonococcus-serum showed a plus four reaction to gonococcus."

The evening this report was received an injection of Neisser sero-bacterin (mixed) was given at about 7 o'clock and by 10 o'clock the patient had fallen asleep with no further medication. The next morning she felt better and could see the nurse moving around the room. From this time on her improvement was rapid. Injections were repeated at forty-eight-hour intervals for three days. On the third day after the first injection the albumen was reduced to a faint trace and the pus cells entirely disappeared. The tension had fallen to normal and the pupils began to dilate, leaving very little debris on the lens capsule.

Her vision is now normal and she is apparently no worse for her experience, although some authorities advise against bacterin therapy in patients exhibiting renal lesions.

It is interesting to note the improvement in the urinary findings, to wit, a slight decrease in the amount of albumen and a total disappearance of the pus cells.

Naturally, no history of lues or Neisser infection could be gotten from the patient herself. Her physician had no knowledge of any such condition. Here, then, was the classic type of iritis referred to as idiopathic or of obscure origin, and until the laboratory report was obtained no definite ideas as to etiology could be formulated.

Gonorrheal iritis as a *clinical* entity has been known for many years. In 1854, Mackenzie, in his famous work on Diseases of the Eye, gave a graphic picture of it and all through the literature since that time are numerous references to it. The elder Brailey, writing in 1898 (Norris and Oliver; System of Diseases of the Eye, Vol. III) states that "it is usually met with during the gleety stages of gonorrhea and is nearly always preceded by, associated with, or followed by, articular swelling and pain, the joints most often attacked being the knee, the hip, the ankle, the elbow and those of the hand and foot. These conditions are chronic and relapsing in character. Painful affections of the peripheral nerves such as sciatica seem now and then to be part of the affection and may exceptionally replace the joint changes. These patients are often pale and thin and weakly and have in many instances suffered from acute or chronic rheumatism in childhood; that is, before they were likely to have contracted a venereal disorder.

A few of the cases seem to begin with symptoms of a mild catarrhal ophthalmia, revealing the true iritis or iridocyclitis at a later stage only." Two of our cases here reported presented quite this picture in the early stages.

Statistics as to the Etiology of Iritis.

In the 1,500 syphilitics examined at the Hot Springs of Arkansas, R. Brunson (Amer. Year Book of Medicine and Surgery, 1900) found iritis twice as frequently as in 1,500 rheumatics similarly examined. H. H. Brown (Annals of Ophthal., Apr. 1899) found 55% to 65% of all his cases of iritis to be syphilitic, while a proportion varying from 10% to 20% he credited to arthritic toxins. Jennings and Hill (Ophthalmology, VI, page 52), tabulating 500 cases of iritis from the records of Wills Eye Hospital, put down syphilis as the cause in 61.4%, and rheumatism in 25.4% of the cases; gonorrhea occurring anywhere from, simultaneous with, to 18 years preceding the ocular disease was found in 5.2% of all cases. Other general systemic disorders are set down as occasional causes. Of 159 cases of primary iritis studied in the wards of St. Bartholomew's Hospital between 1883 and 1900, Yeld (Brit. Med. Jour. May 13, 1911) found syphilis responsible in 45% of the cases, gonorrhea in 15%, rheumatism in 16.6%, toxemia in 10%, gout 1.25%, osteoarthritis 1.25%, obscure unknown causes 12%.

Concerning so-called rheumatic iritis, much needs to be said. Practically all the cases just cited from the literature were on the old-time clinical basis. Laboratory diagnosis will have now to settle these questions for us. For instance, Vondegrift (Jour. Amer. Med. Assn., Jan. 8, 1912) describes a case of gonorrheal choroiditis successfully treated with mixed Neisser bacterin. The etiology of the case was firmly established by a positive complement-fixation test made by Dr. H. J. Schwarz, although the clinical findings of prostatic smears showing great numbers of gonococci and staphylococci made the diagnosis fairly clear. With the Wassermann reaction we can pretty definitely determine the true percentage of syphilitic cases. The complement-fixation test should help us to clearly detect the frank and also obscure gonorrheal cases. This, we believe, will cut down heavily the percentage of so-called rheumatic cases. Clinically they are deceptive. Even so acute an observer as Risley (Therap. Gazette, Aug. 15, 1907) remarks that he "has often not felt able to say, from the objective symptoms alone, whether a particular case of iritis was rheumatic or syphilitic." Ormond (Brit. Med. Jour. Oct. 19, 1912) points out that while iritis is undoubtedly associated with subacute articular rheumatism or more probably with subacute rheumatoid arthritis, its association with acute rheumatism is doubtful. Macrae, for instance (Ophthalmic Year Book, 1912, p. 170), noticed it only once in 270 cases. Of Beaumont's (Brit. Med. Jour., Dec 17, 1910) list of 80 cases of iritis, but four gave a history of acute rheumatism.

The reader who is interested is referred to the following list of authors who have written on the use of serums and bacterins in ophthalmic practice:

Rohmer, Ophthalmoscope. Vol. XI. p. 562.
Dörr, Clinique Ophthalmologique. Vol. 19, p. 36.
Janson, Ophthalmoscope, Vol. XI, p. 692.
Axenfeld and Arisawa, Klin. Monats. f. Augenh., January, 1913.
Walter, Trans. Am. Acad. Oph. and Oto-Laryn. 1913.
Zur Nedden, Arch. of Ophthal., 1909. p. 28.
Weeks, Trans. Sec. Ophthal. A. M. A., 1910, p. 356.
Darier, Clinique Ophthal., Vol. XVI, pp.131 and 576.
Darier, Vaccines, Serums and Ferments, Paris, 1912.
Lawford, Tr. Oph. Soc. Unit. King., XXXII, p. 400.
Bryan, Ophthalmoscope, IX, p. 818.
Axenfeld, Ophthal. Review, 1909, pp. 1, 31, 63.
Romer, Deutsch Med. Wochens. 1909, p. 2148.
Mayou. Annals of Ophthal., XXI, p. 669.

In his dissertation on uveitis before the Ophthalmic Section of the International Medical Congress at London (1913) de Schweinitz (Brit. Med. Jour., Aug. 16, 1913) put it down as his opinion that every case of uveitis is of septic or toxic origin. The term "rheumatic iritis" he would discard. He goes on to say: "Although persons suffering from muscular rheumatism and chronic polyarthritis develop the disease, such cases are probably the result of autotoxemias and have nothing to do with rheumatism. In these cases not only the urine but the whole metabolism should be studied." To this we would add, careful laboratory study of the blood for all manner of reaction and complement-fixation tests. In discussing nine cases of relapsing iritis, Hiram Woods (Trans. Am. Ophth. Soc. 1905) found that in three of the cases gonorrhea played an important role. He is strongly of the opinion that gonorrheal iritis would often be the diagnosis if more careful search were instituted. Mansillas (Rev. de Med. cirurg. Pract. Nov. 14, 1913) refers to a case of relapsing gonorrheal iritis in which fourteen recurrences had been observed and studied.

Bacterin and Serum Treatment of Gonorrheal Iritis.

In recent years quite a series of cases of gonorrheal iritis have come to report that were treated with bacterins of some kind. Also more and more emphasis is being laid upon the fact that a latent gonococcemia may lurk in the body for many years. To this we shall refer at greater length presently.

Cobbledick (Ophthalmoscope, Vol. X, p. 319) observed iritis (the fourth attack) complicated with optic neuritis, thirty years after gonorrhea. Gonococcic vaccine produced immediate improvement in the iritis. In a later communication (Ibid X, p. no. x) he adds nine further cases in which iridocyclitis occurred in patients with antecedent gonorrhea dating back as long as thirty years, in nearly all of which, including the case of longest record, gonococci were found in the urine. He feels that acute unilateral cases which in the past have been classed as rheumatic are mostly, if not all, gonorrheal in origin. Gonococcus vaccine of mixed strains not only materially shortened the attacks of iritis, but also gave rapid and complete relief to the rheumatism associated with these cases.

Harrison Butler (Ophthalmoscope, Vol. IX, p. 824) observed good results from injections with antigonococcal serum in three cases of gonorrheal uveitis which had resisted all the usual treatment. In a patient who had had four recurrences of iritis in five years with associated arthritis, Shumway (Tr. Sec. Ophthal. College Phys., Phila., Nov. 15, 1911) records recovery from a bilateral attack following four injections of Neisser bacterin. J. G. Dwyer (The Use of Vaccines in Eye Affections,. Arch. of Ophthal., Vol. XLII, 1913), No. 3) also reports successful use of gonococcal vaccines in this form of iritis.

The Laboratory Diagnosis of Gonorrheal Iritis.

This we feel has come to be the crux of the whole matter, for if the etiology and diagnosis of gonorrheal iritis can be put upon an exact scientific basis by laboratory tests, we shall be in an established position. Not only will the treatment be thus plainly indicated, but also much light will be thrown on the etiology of many cases of iritis and arthritis heretofore adjudged rheumatic or due to some hidden disorder of metabolism. In the three cases above reported the gonorrheal etiology might have been easily overlooked as in all three cases it was latent; at any rate it was not clinically active. Indeed, in case No. 1, the complement-fixation test was asked for after a urethral and prostatic smear had been pronounced negative by one of our recognized genito-urinary surgeons. To our surprise the report came back "negative Wassermann," and "faintly positive complement-fixation test for gonococcus." The use of bacterin

Neisser demanded by this report was followed by striking results.

In case No. 2 the general condition was pronounced by a careful internist as polyarthritis rheumatica. No gonorrhea was clinically in evidence, but again the laboratory report called for vaccine treatment, with prompt response in every way.

In case No. 3 a gonorrheal etiology seemed rather remote as a possibility, but the laboratory report again, with its negative Wassermann and positive complement-fixation test, gave unmistakable indications as to treatment with sensitized bacterin and the results were not only brilliant but permanent.

We feel, therefore, that we may be permitted to urge in every case of iritis, that a complement-fixation test should be made at the same time a Wassermann reaction is instituted. It may be objected that the complement-fixation test for Neisser is not yet on a fixed basis. This is freely admitted. Kolmer and Brown, in their recent investigations on animals (Complement-Fixation in Gonococcus Infections. John A. Kolmer aud Claude Brown, Jour. of Infectious Diseases, Vol. 15, July, 1914), say very frankly, "The reactions (gonococcus complement-fixation) are not generally as satisfactory as those occurring in the syphilis reaction because the quantity of gonococcus antibody is much smaller unless grave and widespread gonococcus metastases exist." There can be no doubt, however, that so valuable a test will soon be put upon a more definite basis. Then, and then only, shall we arrive at a definite estimate of the percentage part played by both syphilis and gonorrhea in the causation of iritis. Also our belief is strong that if resort to these two methods of etiologic diagnosis is made a regular method, rheumatic iritis as a nosologic term will be discarded as de Schweinitz has already urged it should be.

Treatment.

Shall we use ordinary stock bacterins (or vaccines) or "sensitized vaccines" or autogenous vaccines?

It is a matter of rather general agreement that, when possible, autogenous vaccines should be employed. But in the case of gonococcal infections of the eye the inflammatory process is too rapid to permit of the time required for the production of an autogenous gonococcal vaccine, not to speak of the acknowledged difficulty often experienced in producing it. Moreover, in the three cases we have reported, the gonococcemia was latent and there was no known nor findable focus of infection from which material could have been taken for the making of an autogenous vaccine.

We are, therefore, compelled to resort to either ordinary stock bacterins or the new sensitized bacterins.

Hitchens (Theories Underlying the Use of Antitoxins and Vaccines. A. P. Hitchens, Amer. Jour. Pharmacy, May, 1914) has recently called attention to the suggestion of Besredka "that amboceptor be utilized to prepare the bacteria for the immediate action of the complement. The amboceptor is obtained by injecting goats or sheep with massive doses of bacteria like those it is desired to sensitize. Bacteria thus prepared for the action of the complement were said to be "sensitized" and the suspensions of such bacteria were called by him "sensitized vaccines." The vaccines in general use today impose a variable period of a few days during which time the body is reacting to it before the good effect of the vaccine is obtained. The sensitized vaccines do away with this necessary period and are therefore much more prompt in their action. Hence it is our feeling that in gonococcal inflammations of the ocular tissues, the sensitized vaccines should be used until the inflammatory process is entirely controlled; and then resort should be had to the non-sensitized vaccines, which, other things being equal, should confer a longer period of immunity, as pointed out by Lawford.

Those who prefer a gonococcus mixed vaccine are not without scientific basis for their argument. Kolmer and Brown (q. v.) have shown the occurrence of cases of chronic gonococcus infection with antigens of staphylococci, streptococci and diphtheroid bacilli, which would indicate the active rôle these organisms may assume in these infections. Micrococcus catarrhalis is also to be considered in this connection.

Inasmuch as the complement-fixation test may now be done for most of the usual organisms (see Bradbourne who obtained excellent results with antistreptococcic polyvalent serum in a case of double iritis of streptococcic origin, Ophthalmology VIII, p. 175) we may be on the eve of many important discoveries concerning the true etiology of iritis.

None of the cases here reported has shown any recurrence, although of course it is too soon to say how long the immunity will last. The fact stands that there was rapid improvement in each case, and almost immediate relief from pain. In all of these cases there was some history of trauma, fast riding with exposure to wind and dust, and all required several days for actual synechia to take place, as shown by Brailey many years ago.

The time between the gonococcic infection and the onset of the iritis was 5 to 15 years and possibly longer, in one case, that of No. 3 (the grandmother) no definite history as to the time at which infection occurred was obtainable.

Of these three cases, two were men between 36 and 40 years of age. Just where the organisms had been or were lurking at the time of the iritis is impossible to say. They were probably sealed up in some spot where their toxins were produced, absorbed by the circulation and carried to the exceedingly fertile territory of the uveal tract.

In conclusion we might summarize as follows:—

1. Iritis as a manifestation of a latent gonococcemia is probably a much more frequent picture than is generally thought.

2. The complement-fixation test should be as regularly made in every case of iritis as the Wassermann test.

3. No case of iritis can be said to have been properly studied that has not been subjected to the complement-fixation test.

4. In iritis with a negative Wassermann reaction that has not promptly responded to mercury, an injection of Neisser bacterin (mixed) is worth a trial even though the complement-fixation test be also negative. Especially is this to be urged if there are any active or past signs of arthritis.

5. Streptococcal iritis is now a recognized entity (Bradbourne).

6. It is quite likely that instances of definite staphlyococcic and pneumococcic iritis will soon come to report as the complement-fixation test for those microörganisms has now passed the experimental stage.

7. The treatment of gonococcal iritis from the general standpoint promises to become largely vaccinal.

8. In acute cases stock vaccines or bacterins offer the best results; and not too much emphasis can be laid on the statement that in such cases "sensitized bacterins" offer much the speediest results.

9. To confer long continued immunity after a cure has been accomplished, it is altogether probable that non-sensitized bacterins will be of more value than sensitized ones.

1212 Spruce St.

SPHERIC ABERRATION: THE IMPORTANCE OF ITS CORRECTION IN APPLIED REFRACTION.

BY

ALBERT B. MASON, M. D.

WAYCROSS, GA.

A search through a number of standard text-books on Ophthalmology and Refraction reveals the fact that no attention is given to spheric aberration in applied refraction. In fact, we are told that it should not be considered.

In retinoscopy, on the other hand, we are taught to watch for the movement of the retinal illumination "through a 4 or 5 mm. area at the apex of the cornea, as this is the portion of the refractive media in the normal eye that the patient will use when the effects of the cycloplegic pass away and the pupil regains its normal size." (Thorington: *Refraction and How to Refract.*)

In order that absolutely correct measurements of the error of refraction can be made it is necessary that two obstacles be overcome. These are accommodation and spheric aberration. Accommodation is overcome by the use of drugs which cause paralysis of the muscle of accommodation and dilatation of the pupil. We are practically of one mind in regard to the use of cycloplegics. Yet, we have overlooked the fact that by dilating the pupil and allowing light to pass through the periphery as well as the center of the lens we cause spheric aberration. This is corrected in the normal eye—without the pupil being dilated—by the iris.

Rays of light that pass through the periphery of the lens are brought to a focus sooner than those passing through the center. This irregularity in the focusing of the central and the peripheral rays is called spheric aberration.

The lens is more or less flat at its center and more convex at the periphery. This being true, the ray of light A (Fig. 1, a), since it forms a right angle with the surface of the lens, passes through unrefracted and becomes the axial ray. Rays B and B′, entering the eye parallel to A, form angles of incidence and are brought to a focus at a given point F′ on the axial ray, which, we have just seen, is perpendicular to the surfaces of the lens. Rays C and C′, which enter the eye parallel to A, are likewise brought to a focus at a given point F.

Now, in the normal state of the eye, the iris, acting as a curtain, does not allow rays of light to pass through the lens except through an area approximately 4 mm. in diameter; that is, for a distance of 2 mm. in every direction from the center. But, with the pupil dilated by a cycloplegic rays of light are allowed to pass through an area that averages 8 mm. in diameter.

The area of the 4 mm. pupil is 12.566 square mm. That of the 8 mm. is 50,265 sq. mm. The peripheral rays, therefore, represent an area of 37.699 sq. mm., which is three times the area of the normal pupil. (Fig. 1, b). Since the peripheral rays are in majority, the lens accepted does not correct the refractive error of the central, but those of the peripheral rays, the error varying with the error of refraction.

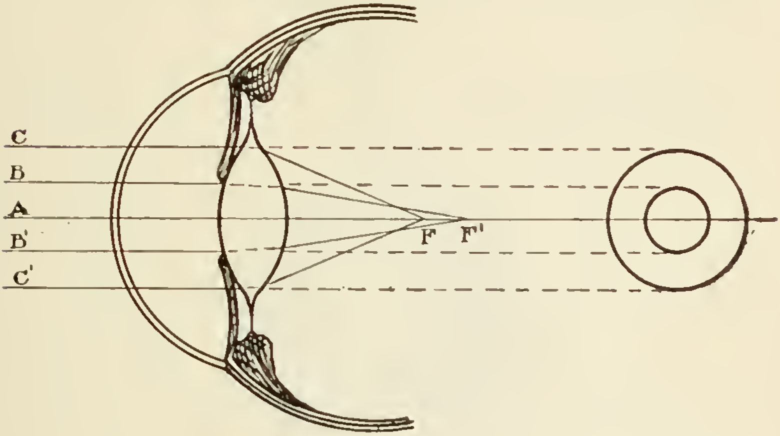


Fig. 1.

(a) Anterior segment of eye (diagramatic) illustrating spheric aberration. A is the axial ray, B-B' are the central rays, C-C', the peripheral. Distance from F to F' is the focal line of Strurn.

(b) These circles show the relative area of the pupil with and without mydriasis. The area of the small one, which is 4 mm. in diameter is 12.566 sq. mm.; that of the large one, which is 8 mm. in diameter is 50.265 sq. mm.

Now, it is evident that, if we make a certain reduction from the trial-case findings, the reduction varying, of course, with the error of refraction, the lens prescribed will not be an accurate correction of that part of the refractive media that will be used, *because we did not start with a correct measurement of the error of the central rays.*

Two years ago I published an article describing a pupillary disc for the correction of spheric aberration. (*Ophthalmic*

Record, Dec. 1912). There were several objections to this device; it was too thick, too heavy, and rather clumsy.

In order to overcome these objections, I have devised another instrument. (Fig. 2.) The larger, or stationary disc is the same size as the ordinary trial lens, and has in its center an aperture 8 mm. in diameter. The smaller, or revolving disc has four apertures 8, 5, 4 and 3 mm. in diameter placed between its center and periphery, any one of which may be centered over the aperture in the center of the larger disc. A broad white line placed in the diameter of the 8 mm. aperture makes the device an admirable axonometer for use in retinoscopy.

The purpose of the disc is to correct spheric aberration, and it is used in this manner: The size of the pupil with accommodation at rest is noted at the first examination; with the pupils dilated and the patient seated at the trial case, the disc is inserted in the trial frame with that aperture on the revolving disc that corresponds to the size of the pupil noted at the preliminary examination correctly centered in front of the eye.* The trial case examination is then made in the usual manner.

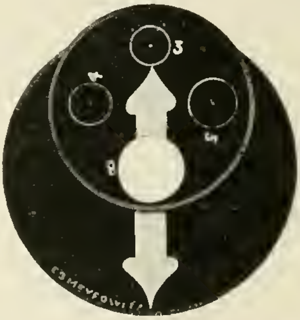


Fig. 2. Pupillary Disc.

The first hundred cases I refracted with and without the disc gave the following results:

Same vision with same correction, 10 cases.
Same vision with different correction, 29 cases.
Better vision with same correction, 32 cases.
Better vision with different correction, 29 cases.

---

*I place the disc in the middle cell of the trial frame, with the front of the device toward the eye. This enables one to change lenses without disturbing the position of the revolving disc, which otherwise is easily moved in the act of changing lenses. Cylinders are worked in front of the disc and spheres in the posterior cell.

It will be noted that in 90% of the series either better vision was obtained or a stronger lens accepted. Of 11 cases of myopia and myopic astigmatism, 10 were among the 32 cases in which the same correction gave better vision. A different correction was obtained in 58 cases. Half of them showed no increase in vision, while the other half showed an increase of one line of Snellen's Test Type. All of the 58 cases were either hyperopia or hyperopic or mixed astigmatism. The increase in correction varied from .12 to .50 dioptre, the latter in errors of 2.50 dioptres and upward.

Of the 10 cases in which no difference was noted, 8 cases accepted plus cylinders, .75 dioptre and under; 1 accepted cross cylinders and 1 a minus cylinder.

Since the summer of 1912 I have used the pupillary disc in refracting every case. In measuring the size of the pupil with accommodation at rest, I have found the vast majority to be approximately 4 mm.; 3 mm. and 5 mm. pupils have occurred in about equal number.

I have found the disc useful in refracting children and that class of patients who are constantly turning their heads from side to side and up and down, as it is impossible to see the test type except the head be in one position.

I believe it is just as important to correct spheric aberration as it is to paralyze the muscle of accommodation. Certainly, if we take notice of it in retinoscopy, we by all means should recognize it as a factor in applied refraction.

224-226 Bunn Building.

SALVARSAN IN OPHTHALMOLOGY.*

BY

EDWARD STIEREN, M. D.
PITTSBURGH, PA.

Since the technique of preparing and administering Salvarsan and its formaldehyde compound, Neosalvarsan, have reached their present state of exactness, reports of its harmful effects on the eye and relapses of ocular conditions are becoming gratifyingly less.

We realize now that some of our mishaps with this remedy in the past were in all probability due to faulty preparation or from deleterious by-products formed in the system when given intra-muscularly.

---

*Read before the College of Physicians of Pittsburgh, Nov. 12, 1914.

However in spite of the present day perfect technique and the further elaboration of it by Swift and Ellis, reports of sudden blindness or impaired vision following the use of Salvarsan continue to bob up with the persistence of Banquo's ghost.

It is natural that ophthalmologists the world over are giving this therapeutic measure the utmost consideration; hence the eye literature of today teems with articles, some for and some against its efficacy in treating syphilitic lesions of the eye, and there still are too many reports of blindness or impaired vision following its use when given for general or para-manifestations of the disease.

Commenting on this The Ophthalmic Year Book for 1912 says: As to the possible ill-effects of salvarsan, both on the optic nerve and the motor nerves of the eye, opinion is still divided. Trantas, who saw a total ophthalmoplegia develop, eight weeks after the use of the drug for primary syphilis, points out that ocular motor paralysis is very rare so early in the disease.

Among 370 syphilitic cases *treated* with salvarsan, five ocular muscle palsies occurred, while Stern found in 5000 syphilitics *untreated* with salvarsan only three instances of ocular motor involvement. A suspicious circumstance too, is that the paralysis came on, in the recorded cases, at about the same time, two or three months after the use of the drug.

On the other hand there are others who hold that these palsies and the optic atrophies are due to syphilis and not to the drug. Goerlitz, Geronne and Gutmann attempt to explain these early palsies by stating that salvarsan seems to change the course of syphilis so that the so-called tertiary symptoms are likely to appear much earlier that when it has not been used.

Coppez observed paralysis of the right inferior rectus following a fourth injection of 20 c.g. of salvarsan, six months after the third. Antonelli records a case in which after a second injection of 0.5 gm. of arsenobenzol, paralysis of the externus, optic atrophy, impairment of hearing and facial paralysis occurred and was not relieved by repeated doses of that remedy and the use of K. I. and mercury.

At the January 1914 meeting of the Pittsburgh Ophthalmological Society, Weisser reported a case of syphilitic tabes with double optic atrophy; R. V. no light perception: L. V. 6/30. Salvarsan was given, three injections by the spinal fluid method, at intervals of one week. In half an hour after the third injection vision in the left eye suddenly fell to hand movements with no subsequent improvement. In the discussion on this report Curry stated that he had used salvarsan in a case of tabes with the result that in five weeks both eyes were blind from optic atrophy.

I once saw a large central scotoma due to retrobulbar neuritis in a syphilitic respond promptly and lastingly to one intravenous injection of salvarsan and on the other hand have seen vision drop rapidly from normal in each eye to light perception only, in a neurotic individual of bad habits after a single dose of salvarsan properly administered, both optic discs going into white atrophy. This patient had two negative and one faintly positive Wassermann reactions and strongly denied syphilitic infection.

In discussing a paper by Maxey on this subject before the Pacific Coast Oto-Ophthalmological Society, (Ophthalmology, Oct. 1913), A. Edward Davis of New York spoke in part as follows: "It is my personal experience that salvarsan does not injure the eye in any way even in acute inflammation of the retina and optic nerve, and I may say that John A. Fordyce of New York, who has given salvarsan in more than one thousand cases, has come to the same conclusion, that is, that salvarsan has no injurious effect on the eyes whatsoever. It was his practice when he first began to give salvarsan to have the eyes examined in every case, and if the optic nerve was affected not to give the remedy. Now he does not take the trouble to have eyes examined, as the only effect on them in his opinion is a beneficial one."

Now the authority above quoted is most high coming as it does from one whose vast experience and perfect technique is nowhere excelled, and yet the Court of Experience, which is in session daily, not infrequently reverses this opinion.

I have observed a number of cases of *optic neuritis* improve more rapidly under salvarsan, it seemed to me, than cases treated in the past with mercury, but with more secondary atrophy, and from my observations I have no hesitancy in stating that I believe salvarsan does promote primary optic atrophy when it has already begun. It may be that with the less intensive technique of Swift-Ellis, nerve tissue may be conserved and the para-syphilitic affections of the cerebrospinal axis may be effectively checked. Surely if salvarsan is to be given in primary atrophy of the optic nerve this should be the chosen form of administration and I am inclined to believe should also be the method used in optic neuritis or its subsequent secondary atrophy, and in ocular motor paralysis. These patients however should be warned that their eye-sight may be made worse following the administration of either "606" or "914."

A CASE OF KERATO-CONUS, CURED WITH HIGH FREQUENCY SPARK.

BY
E. R. CARPENTER, M. D.
EL PASO, TEXAS.

My object in reporting this case is to show the excellent permanent result in the management of a typical case of kerato-conus without operative interference.

In March, 1912 Miss G—age 24, consulted me in regard to her eyes, stating that she had kerato-conus and had been a patient of Dr. Parisotti of Rome, Italy, during the previous twelve months. She gave a history of myopia in most members in her mother's family, but her vision was good until along in her school work when she wore astigmatic lenses for close work, and that about one year before the present trouble began Dr. Mantaño of Mexico City gave her glasses to wear all the time. She went to Rome in 1910, and as her eyes still troubled her she consulted Dr. Parisotti and he could not find anything materially wrong. Nine months later the eyes became worse; she could not read; had headaches; her eyes would get red and be painful when she would move them; she had distorted and double vision. About three months after this attack Dr. Parisotti made the diagnosis of kerato-conus. She was put on pilocarpine, bandages, etc., for some time, and later an operation was advised, but was not performed.

In March, 1912 when I first saw her the vision was 10/200 with mydriatic and a minus 10S. She could count fingers only at close range without artificial aid. The acute symptoms had subsided, the conical condition was very apparent and typical. Tension was not increased. She could not read. The fundus was difficult to examine, but no myopic symptoms were present; Wassermann reaction negative; general health fairly good.

The parents were anxious to have something done and as I was not anxious to cauterize, it occurred to me that if in some way an interstitial keratitis could be produced in the conical portion, the weak wall might be strengthened and reduced by the resulting cicatricial tendency. I took this subject up with Dr. W. B. Snow of the New York School of Electro-Therapeutics, explaining the condition and asking his advice as to using the high frequency spark. He thought it was a good idea and advised me to repeat it if necessary.

The cornea of one eye was thoroughly cocainized, and I applied the effluve from a needle point, almost in contact with the cornea, allowing the spark to strike the conical portion only, just for a second. This was repeated four or five times the first treatment. Naturally, considerable reaction would be expected. The patient was put to bed with instructions to use ice compresses freely, and morphine if needed. For two or three days she suffered intensely and the eye was very sensitive to light. In about two weeks the same procedure was applied to the other eye, with about the same disturbance. One month after each eye had been treated there was a marked haziness and shrinkage of each conical area, and a decided improvement in the vision. I did not feel that I had used the current quite enough, and repeated the treatment in each eye, with some less reaction than in the beginning. Two months later the conical condition was hardly apparent, a slight scarring could be seen with the naked eye. With a minus 10 sphere in each eye, vision was 20/50. Eighteen months later I saw the case and only by careful inspection would one notice the scarring, while the kerato-conus was not noticeable. Her refraction was then as follows:

R.— 5.50 ≍ — 3.50 × 90 = 20/30 (-??)
L.— 6. ≍ — 3. × 105 = 20/30 (-??)

With this correction, patient was comfortable and could read the finest type on the test card for close work at 8 inches. Ten months later the refraction is unchanged, the fundus is normal and the eyes have a natural appearance.

SUMMARY:

(1.) Simplicity.

(2.) Freedom from danger of complications early or late—no infection, ulcers, etc., to contend with.

(3.) Repeat as often as indicated until result is obtained —perhaps better to repeat than attempt too much at one treatment.

(4.) Vision exceptionally good two and one-half years after treatment, and not changing.

(5.) Patient's family myopics, and she had considerable astigmatism before development of the kerato-conus.

(6.) Appearance practically normal, except by close inspection.

(7.) Without a mydriatic one is able to make out the disc by indirect examination through the previously conical portion.

(8.) Best results should be obtained where treatment is used early.

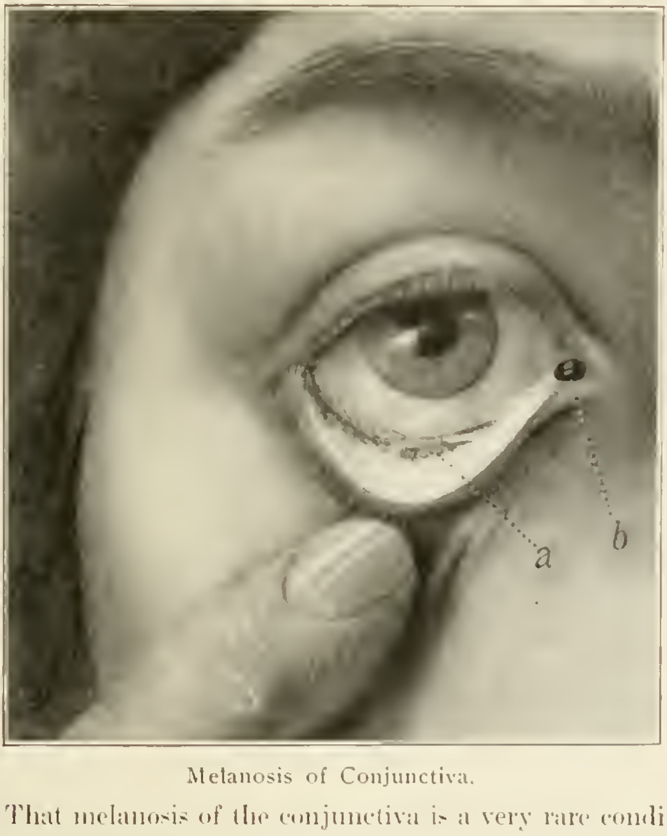
(9.) Kerato-conus is not necessarily due to increased intraocular pressure, but is often due to local disturbance in the cornea, thereby weakening it so the localized area is unable to withstand the normal intraocular pressure, and treatment should have in view a tendency to strengthen the weak place, as is often done in cauterization.

(10.) The treatment as above outlined produces a localized interstitial inflammation, which later forms a slight scar tissue that contracts and strengthens the weak portion, and is far superior to the method of trephining and external cauterization.

MELANOSIS OF THE CONJUNCTIVA. REPORT OF A CASE.

BY
ROBERT L. RANDOLPH, M. D.
BALTIMORE, MD.

Mrs. L. consulted me two years ago for an error of refraction which proved to be a trivial one. She had never had any inflammation of the eyes so far as she herself knew or had heard of from her parents. Her vision was perfect in both eyes. I noted that in the lower conjunctival sac of the right eye there were three patches of pigment. These patches lay in almost a straight line along the inner border of the lid and nearly invading the ocular conjunctiva. They were discrete, sharply marked, and of different sizes—the outermost one being the longer, the innermost the shorter, and both lying nearer the eyeball than the companion patch which lay well out on the lid and about midway between the inner and outer canthus. The caruncula was a much deeper black than the three patches just mentioned. In the left eye there was one small patch of pigment in the lower conjunctival sac, and the lower half of the caruncula was black, and just as in the right eye this blackness was of the same intensity as was noted in the case of the right caruncula, the only difference being that the upper half of the left caruncula was of the normal pink red. My patient had been aware from early childhood of the existence of these black spots, and her parents told her she had always had them. The ocular conjunctiva was entirely free of any such blemish. There was no elevation of these pigmented areas, and as has been said they were only in the palpebral conjunctiva and carunculæ.



Melanosis of Conjunctiva.

That melanosis of the conjunctiva is a very rare condition is proved by the records, there being only a few cases reported. A case has been recently reported by Beauvieux and Muratet, of Bordeaux.* In this case there was a decided pigmentation of the conjunctiva of the right eye, which pigmentation covered almost the entire outer half of the ocular conjunctiva, the condition showing no tendency to invade other

---

**Archiv d'Ophthalmologie*, October, 1913.

parts of the surface of the eyeball or of the lids. My patient would not allow me to excise one of the patches on her lid for anatomical examination. Beauvieux was more fortunate, and secured a piece from his case for microscopic study. It was noted that the pigment was most abundant in the basal membrane of epithelium, less abundant toward the surface. The pigment was either free or included in the epithelial cells. The pigment cells were very small and often like dust in size. Deeper there were found areas containing pigment cells not unlike what one sees in the surface epithelium. The color varied in shade from straw to India ink. There seems not the slightest tendency to malignancy, and a year later there was no evidence of recurrence at the point where the piece of conjunctiva was excised. The authors seem to regard the condition as one of a variety of pigmented nevus.

Personally, I am not entirely satisfied with the explanation of the genesis of the condition, in other words, as to the origin of the pigment cells found in this situation. According to Schann and Wolfrum there exist in the conjunctiva cells which possess the property of either forming pigment or of attracting it to the edge of the protoplasm under the influence of certain causes. The slightest irritation which would produce no effect on ordinary cells would produce on these specially predisposed cells a pigmentary reaction.

A METHOD OF DESTROYING THE LACHRYMAL SAC IN CHRONIC DACRYOCYSTITIS.

A Substitute Procedure for Exsection.

BY

H. GIFFORD, M. D.
OMAHA, NEBR.

In the summer of 1886 a boy came to me with dacryocystitis following a horse-kick, which broke the continuity of the lachrymal duct. Probing being impossible, I cut into the sac, burned out the interior with a small Paquelin cautery and obtained a prompt and perfect result. I have seen the patient occasionally since then and he has had no further trouble, barring a slight over-lachrymation in the wind. For the next twenty years I treated my incurable cases of dacryocystitis in the same way, without any failures, so far as I know. Some eight years ago, however, I began to use trichloracetic acid in place of the cautery, because while the latter never failed me nor led to any but the best results, it was an unpleasant thing to use with a local anesthetic and I always had a slight misgiving lest, in some case, I should burn too deeply and cause a necrosis of the bone. Since then I have used the following method:

Infiltrate the tissues well down to the sac with one or two per cent cocaine, combined with a little adrenalin.

Incise the sac three-sixteenths to one-quarter of an inch inward from the caruncle, making a vertical cut ¼ to ⅜ of an inch long, including the greater part of the palpebral ligament. Be careful not to squeeze the sac out before the incision, since a distended sac is naturally much easier to locate. When once in the sac it is well to introduce a grooved probe and extend the internal incision with the angled knife to the full quarter of an inch, or more.

Then pack the sac with a piece of iodoform gauze. This should be a narrow strip doubled so that the part that goes into the sac has no loose fibers.

At this point the methods diverge, according to the urgency of the case.

If it is important to complete the operation as quickly as possible, wait until the bleeding is stopped. Prepare half a dozen small applicator swabs, with cotton on both ends, to dry out the sac. Have one applicator, preferably a slender one of metal, with cotton wrapped firmly on the end so as to make a ball about an eighth of an inch in diameter. Apply zinc ointment over the skin surrounding the external incision and for a short way into it.

Separate the lips of the wound well down toward the internal incision with any pair of slender forceps. Put two or three drops of liquefied (full strength) trichloractic acid into the cavity; then scrub the interior of the latter thoroughly with the ball swab referred to, being extra careful to reach the cupola and the cellar—in fact, every part of the interior of the sac. Dry out the cavity again, dip the ball-swab in trichloracetic acid once more and give an extra rubbing for good measure. There is not the slightest danger that I have ever seen of overdoing this cauterization. A bulb-pointed lachrymal probe does very well to rub in the trichloracetic acid, though I generally use the ball-swab referred to.

Dry out again, syringe out with any cleansing solution, fill the cavity lightly with aristol powder, put zinc ointment on the skin surrounding the incision, and apply any light, moist or vaseline bandage. The latter may be left off after a day or two, and nothing further will be required except to keep the skin around the cut soft with a little zinc ointment or vaseline until the healing is complete.

Where the time of the patient is less valuable than that of the physician I do the operation in two stages, simply cutting into the sac and packing it the first day: and on the second, proceeding as above, after anesthetizing the interior of the sac with a few drops of 10% cocain and a few crystals of the same. This is also desirable before putting in the trichloracetic, even when the procedure is completed at one sitting, unless the injection anesthesia has been carried well down into the sac.

Out of about 40 cases in which I have used this method, there have been three in which a slight discharge remained from the canaliculi or possibly from the outer extremity of the sac. All that I have found necessary in this event has been to slit up both canaliculi so as to throw them into one opening; and to use the galvano-cautery freely in the pocket thus formed.

The method is an improvement on the old plan, in which zinc paste was used, as it leaves less to chance. The resulting scar is so slight that it can only be seen by close inspection. Perhaps some other acid than the trichloracetic would do as well.

I have never exsected a lachrymal sac and haven't the slightest intention of doing so.

The following description of an interesting archeologic medical discovery, a Roman oculist's seal, is from an editorial in the issue of the *Lancet* for April 11, 1914:

"It bears an inscription in eight lines, half of which are the quadruple repetition of the owner's name, a new one in the category of Roman oculists. The text runs as follows: 'Aulus Uritius Hermodorus: Melinum Opobalsamum ad Aspritudines. Diasmyrnes lenementum Thurinum ad (Suppurationes). Crocodes ad Caligines.' The name Hermodorus, or Hermodoros, suggests Greek nationality, genuine or assumed, for the oculist, and it is interesting to note that three of the collyria are merely Latin renderings of Greek titles."

REPORTS OF SOCIETIES

CHICAGO OPHTHALMOLOGICAL SOCIETY.

A regular meeting was held October 19, 1914, with the President Dr. Wesley Hamilton Peck, in the chair.

Conservative Treatment of Penetrating Wounds of the Eyeball, by Dr. Albert E. Bulson, Jr., Fort Wayne, Ind., will appear as an original article.

DISCUSSION. Dr. Frank Brawley said it was a routine measure with him to use large doses of urotropin in the beginning of these cases. At least, one hundred grains a day should be given in solution without the addition of any salt, such as sodium citrate or any of the alkaline salts, because the fluids of the body must be slightly acid if the urotropin was to be broken up properly and exert its prophylactic action. When there was irritation of the urinary passages, the urotropin should be stopped for a while and several doses of some alkali given to alkalinize the urine and stop the urotropin from breaking up. Experiments of Kopetsky, of New York, had shown the great value of urotropin.

Dr. Thomas Faith said conjunctival sliding in Dr. Bulson's cases was a very important thing. If there was primary infection one could not do anything with it. The conjunctival flap would prevent secondary infection. The bichloride ointment was valuable in these cases. Another thing was, the patient should be given a chance to recover without meddlesome dressings. We should leave the eye tied up long enough to let the conjunctival flap unite before washing it out and putting in a solution, because sometimes in hospitals, where they were supposed to be careful, the droppers were not clean, the solution was not sterile, and something was introduced that caused trouble. If we let it go for forty-two or seventy-two hours the conjunctiva would be sufficiently united to the edge of the wound to protect it in the future. He had been surprised at the number of eyes he had been able to save by using a conjunctival flap.

Dr. Bulson, in closing, said the principal object in presenting these cases was to call attention to the possibility of saving many eyes that formerly were thought to be hopeless. Many eyes were enucleated that might have been saved.

Expulsive Retrochoroidal Hemorrhage Following Cataract Extraction.

Dr. Horace M. Starkey, Rockford, Ill., reported the following case:

The patient was Mrs. W., aged 87. Commencing central opacity of the right lens was first noted April 20, 1906, and a little later cataracts also began to develop in the left eye and progressed until in 1913 there was good perception and projection in the right, while in the left scarcely sufficient sight remained to enable the patient to get around her own house. Incidentally it might be mentioned that during this time a hyperopia of 2.D was converted into a myopia of 4.D.

During the past few years the patient's general health had been rather precarious, and while operation was frequently requested, consideration of it was postponed from time to time until the health should continue favorable for a longer time. During the first part of 1914 the condition steadily improved until by July it was felt that the desired operation might be permitted.

There was nothing in Mrs. W.'s condition to cause more fear of hemorrhage than in the average patient, but rather the contrary. Her arteries were not degenerated, her physician, Dr. Helm, having stated that the arteries were more those of a woman of sixty-five than of one of eighty-seven. The blood pressure a short time before the operation was one hundred thirty and never seemed much above that.

It was decided that the greatest safety lay in a preliminary iridectomy, and this was accordingly performed July 9. The patient was quite nervous about the operation and made a sudden movement as the section of the cornea was about complete, so that the point of the keratome punctured the capsule, but a good iridectomy was done. The patient suffered a rather severe shock with nausea and vomiting, lasting a day or two, but made a good recovery with satisfactory coloboma and white sclera, so that by August 12 it was considered advisable to proceed with the extraction, in which he was assisted by his colleague, Dr. Fringer. The operation was typical, the section being smooth and ample and the lens coaxed out with a minimum of pressure or other manipulation. The speculum was removed and the patient, who had behaved very well, was told that the operation was over and that she should rest quietly with lightly closed lids for a few moments when the eye would be dressed and she could return to her room. Very quickly a little vitreous appeared between the closed lids, the patient commenced to groan with pain, more vitreous and then blood appeared and then the hemorrhage became quite profuse and the pain very severe. This hemorrhage lasted perhaps five minutes. It was impossible to tell just what ocular tissues were present in this escaping blood.

The patient suffered very severe shock and was so reduced that death seemed imminent for several days. She had gradually improved, but even now, after two months, was so weak that she could not sit up at all.

The eye healed in a few weeks and there was now little irritation. The upper part of the cornea was opaque, but there was but slight atrophy of the globe, showing that not all of the contents of the eye were expelled.

DISCUSSION. Dr. Albert E. Bulson could sympathize with Dr. Starkey as he had had two such cases in his own experience during the last twenty-two years. He also mentioned a case that occurred in the practice of Dr. de Schweinitz, of Philadelphia.

In Dr. Bulson's first case the man had only one eye, the other having been destroyed by a gunshot injury. The man came to him with a senile cataract. He had the patient carefully examined by an internist, something he did not always do. The urine was also examined carefully, and the internist thought the man was in fine condition for an operation. The combined operation was done and the extraction was perfectly uneventful. The speaker flattered himself in getting a splendid result, but after removing the speculum and telling the man the operation was over and he would soon be able to return to his room, in waiting for the collapsed cornea to fill up a little so that the dressing could be applied, the man began to groan and as Dr. Bulson looked over toward the table on which the patient was lying he saw blood rush out from the corner of the eye and it seemed as though the whole eyeball was coming out on the cheek. However, the bleeding stopped, the man was put to bed, and made a satisfactory recovery.

Dr. Thomas Faith spoke of similar cases occurring in the practice of Dr. Fisher and Dr. Dodd.

Extraction of Metallic Foreign Body from Vitreous by Giant Magnet Through Scleral Incision.

Dr. Carroll B. Welton, Peoria, Ill., spoke of the things that influenced the prognosis of the eye from penetrating metallic bodies, and asked the question, what should be the procedure in eyes that contain a chip of metal in the interior of the eye?

The proper course was to use the magnet in all cases as soon as possible after the injury. The more attraction power the magnet had, the better, for with a rheostat the amount of pull could be accurately controlled. Although it was sometimes very difficult and, according to some authorities, impossible to extract a fragment of metal weighing 1/32 of a grain, or less, nevertheless attempts at removal should be made.

If the metallic body had entered the eye through the cornea, no matter where it stopped, whether in the uvea, lens or vitreous, an attempt should be made to draw it forward into the anterior chamber and then remove through the original opening or else make a corneal incision and then withdraw it. If the body should rest posterior to the lens and could not be drawn forward into the anterior chamber, then a scleral incision at a site nearest the metal could be made and an attempt at extraction with the magnet tried. If the particle had penetrated the eye through the sclera and lay posterior to the lens, then its removal should be made through the original wound of entrance, and no effort to draw it forward around the lens into the anterior chamber should be attempted. The opening in the sclera through which the metal passed into the eye might possibly have to be enlarged to permit of its withdrawal. If all attempts at extraction failed, then the eye should be removed, as an eye which contained a foreign body was ultimately lost.

Finally, each case of metallic bodies within the eye must be studied individually as no single method of procedure would suffice to apply in all cases.

Dr Welton related a case, the interesting features of which were: 1. That the patient was not absolutely sure that anything had even struck the eye. This showed that no reliance could be placed on the statement of patients as to whether or not a foreign body had penetrated the eye. 2. That the exact localization by means of an X-ray picture was absolutely needed in this case, and this should always be determined in every case of a metallic foreign body in the eye before any attempts at removal had been made. 3. That in all cases where it was suspected that a metallic foreign body was in the eye, the magnetic properties of such tools should be determined before any attempts were made at removal. 4. A remarkable thing in the case was that though the metal passed through the lens, except for a slight line of opacity along the path of the foreign body, it remained perfectly transparent. 5. The case showed further that the removal of foreign metallic bodies was in some cases impossible except through a scleral incision, and that good results were obtained by this method even though it was contrary to the teachings of Haab.

DISCUSSION. Dr. H. W. Woodruff had had a similar experience to the one related by Dr. Welton in which the foreign body penetrated the iris and the lens and was removed a few hours after the injury through the original opening. The lens did not become opaque. Reports of such injuries were made where the lens had been penetrated, and yet no cataract had been produced. He had seen experiments performed on rabbits' eyes in which the needle was plunged into the eye and opacity of the lens produced in the path of the needle slightly around it, and then cleared up again in a few days.

He called attention to an accident that happened sometimes in removing steel through the corneal wound. Sometimes the piece of steel would lie behind the iris, and the entire iris would come out with the foreign body. It was proper to do an iridectomy where there was liability to such an accident. He spoke of a case where a large piece of steel weighing five grains entered the eye through the ciliary region. He saw the case a short time after the injury and removed the piece of steel through the original opening with some difficulty, but it was necessary to enlarge the opening before it could be taken out owing to the size of the piece of steel. This patient made an uneventful recovery with absolutely no inflammatory signs whatever.

Dr. W. Franklin Coleman spoke of the relative merits of the large and small magnets in extracting pieces of steel or other foreign bodies from the eye.

Dr. A. C. Bartholomew, of Van Wert, Ohio, said that according to the statement of a well known electrical engineer, the ophthalmologist could not get a better result or a stronger pull with a giant magnet than from a small magnet.

Dr. J. P. Worrell, Terre Haute, Indiana, recalled an instance in which a very small piece of iron entered the lens. It did not cause any swelling of the lens, yet slowly the lens became opaque. Later perhaps, if the patient had returned at the proper time, he might have extracted the lens.

As to opacity of the lens clearing up, he mentioned the case of a young man whose eye was struck with a pin in which the cornea and iris and the lens were perforated. He had a small radiating opacity within a few hours following the injury. When seen the next day he had a very large triangular opacity in the posterior fornix. This ultimately cleared up and his eye became normal.

Dr. Major H. Worthington said that a foreign body in the eye was sometimes overlooked by the general practitioner who first saw the case. He recalled the case of a man, a sheet metal worker, who, in punching holes in galvanized iron in a large tank in the country, felt something strike his right eye, although there was no pain except that sensation. At first, he went to a general practitioner who examined the eye and told him there was nothing in it. He gave him boracic acid and told him to wear a patch over the eye, which he did for the first week. Dr. Worthington saw the patient two weeks later, at which time he was having pain. The eye was red and pupil irregularly contracted and there was some ciliary tenderness. The lens was clear. Under a mydriatic the fundus could be seen and the foreign body located in the vitreous. A skiagraph was made and the foreign body located and extracted through the scleral incision. The result was 20/40 vision with his correction. Patient had a myopic astigmatism of minus 1. When he came to the speaker his vision was 20/30 minus 1 with glasses, and in the delay of two days in deciding about having an operation done his vision dropped to fingers at two feet. There was opacity in the vitreous. How long was it safe to allow a foreign body to remain in the eye?

Dr. Clark W. Hawley said, as to the length of time a foreign body might be allowed to remain in the eye, it would depend entirely upon the aseptic condition of the foreign body when it entered the eye. He recalled the case of a patient, eighteen years ago, where the foreign body had entered the eye and was not known to be in the eye at all. The second day after the injury the man went back to his work. Eight months thereafter the patient presented himself with a dilated pupil and wanted Dr. Hawley to reduce it. Vision in this eye was slightly reduced. There was no irritation about the eye. Upon looking into the eye he saw a piece of steel about the size of an ordinary pin head. He showed the case at the time before the Ophthalmological Society, and men of considerable experience said that if the piece of steel was removed the man would lose his eye. He, with the assistance of Dr. Starkey, opened the eye in the same manner that had been described, made a conjunctival flap, took a cataract knife and made an incision, and extracted a piece of steel with a small magnet. The piece of steel was in this man's eye eight months unknown to the patient or anybody. It entered at the sclerocorneal junction. The result of the operation was the man had 20/20 vision.

Dr. C. G. Darling said in the removal of a particle of steel through the scleral incision sometimes it became entangled in the choroid or in the edge of the sclera or in the conjunctiva, and Dr. Wilder in one of his cases had made and used a little speculum, the blades of which are five millimeters long, with very fine, short, sharp pointed pins. An incision was made in the conjunctiva quite a distance from where the scleral incision was made, a few millimeters long, and the speculum introduced into the conjunctival incision. When the incision was made in the sclera the speculum was introduced into the scleral incision. The points on the speculum were only about a millimeter and a half or a millimeter in length, so that they did not enter the eye but held the edges of the sclera apart. By means of this small speculum the wound could be kept open to facilitate the removal of the foreign body.

Dr. William A. Mann stated that sometimes a foreign body penetrated and lodged in the posterior wall of the sclera. The magnet would not touch it if it penetrated the sclera. He had had several such cases, and in only one of them was the eyeball removed and the foreign body removed in that way. Some foreign bodies would lodge in the back of the eyeball and in such cases an X-ray was of advantage in locating them before the use of the magnet to extract them.

Parinaud's Conjunctivitis.

Dr. A. C. Bartholomew reported the case of Miss T., aged 13, who was referred to him on February 14, 1914, by her family physician with the following history:

She first consulted him (the family physician) one week previously, complaining of a lump on the upper lid which scratched the eyeball. The eyelid drooped and there was some discharge in the corner of the eye. There was a piece of tissue projecting below the upper lid and this he grasped with a pair of forceps and pulled away. He did not notice the condition of the glands. The patient was suffering from yellow jaundice at the time.

When seen by Dr. Bartholomew, the left upper lid was swollen, and drooping and a slight discharge was collected at the inner canthus. On everting the lid, it showed a raw, bleeding, hypertrophied surface involving the inner margin of the turned cartilage. The pre-auricular lymphatic gland was enlarged to the size of a small walnut and was tender to palpation. There was no fluctuation. One gland just below the ear was also involved and there was a slight ciliary congestion probably from irritation of the cornea.

The other eye was not involved. Under two per cent silver nitrate applications every other day and the use of a collyrium at home, the condition cleared up rapidly and patient was dismissed March 26, 1914.

Dr. Bartholomew also reported a case of unsuspected sarcoma of the eyeball.

DISCUSSION. Dr. H. W. Woodruff had had two cases of Parinaud's conjunctivitis. One of them was a mild case in a young woman. She recovered in a few weeks. The infection was comparatively mild. She had the typical characteristic conjunctiva with enlargement of the glands to a slight degree. She recovered with very little treatment.

The second case was in a boy, eight or nine years of age. The termination in that case was very unusual. He had considerable enlargement of the glands. The family physician opened a number of these glands, but they did not contain any pus. There was nothing but clear serous fluid in them. There were no organisms discovered at any time in the secretion of the glands. The eye recovered. He removed some granulations after a time because they were so large. The swelling or hypertrophy diminished and the eye returned to normal, but about six months later the boy died. The first week he declined rapidly, and then died without any other diagnosis than Parinaud's conjunctivitis having been made.

Cicatricial Ectropion of the Upper and Lower Lids.

Dr. J. P. Worrell, Terre Haute, Indiana, read a paper on this subject.

The patient, a man of fifty-four years of age, in an attempt to rescue his wife from burning gas, was severely burned on the hands and face, losing most of his fingers and suffering such injury to the face that the contraction incident to the cicatrization resulted in complete ectropion of all the eyelids.

The patient came under treatment seven months after the accident and presented the following conditions: Below the level of the outer canthus the parts were lined and seamed and so adherent to the underlying tissues that little mobility was preserved. This condition was much aggravated by an injudicious attempt to correct the deformity made soon after the wounds had healed, as was evidenced by the heavy cicatricial lines. The forehead and upper part of temporal region was smooth, the burn having destroyed the superficial layers of the skin. The right eyebrow was wanting, and the outer third of the left. The upper lids were everted, the tarsus curved on itself and thickened, the eyelid rolling out when the patient looked downward, cul-de-sac preserved. The lower lids were stretched downward, obliterating the cul-de-sac. The conjunctival surface was red, somewhat rough and lying in the plane of the skin below. The tarsus was adherent to the underlying tissues. The lid margin was indicated simply by the line of transition from the mucous membrane to the skin and the presence of a few cilia. The conditions in the right were aggravated by the displacement downward and outward of the outer canthus including the external palpebral ligament.

Correction of the deformity was made by a series of operations, running over a period of several months. Each operation was limited to one lid inasmuch as the operation was necessarily a tedious one, and it was impracticable to prolong the anesthesia. The method employed was the use of sliding flaps, supplemented by Thiersch and Wolf grafts. In restoring the lids proper, the principle of removing the new cicatricial area as far from the lid margins as possible, as emphasized by Hotz, was followed, such modification of his method being made as the exigencies of the case demanded.

The final result was most gratifying, restoring the lids to their normal position with preservation of their function. From a cosmetic standpoint it was fairly satisfactory.

After the restoration of the lids to their place the condition of the cornea greatly improved so that the iris could be seen throughout its entire circle. The anterior chamber deep, showing that what was thought to be an adherent leucoma was but hypertrophy of the epithelium in the attempt of Nature to preserve the eye against the evil effects of exposure. Behind the clearest portion of the cornea iridectomies were subsequently made giving vision by which ordinary newspaper type could be read.

The diversity of condition afforded an opportunity for the trial of various methods of covering the raw area so that the comparative merits of flaps and the various forms of grafts could be advantageously studied. Thiersch and Wolf grafts played a larger part in the correction of the trouble than did sliding flaps. Of these the Thiersch graft gave good results, "taking" easily and was followed by little or no contraction of the underlying tissues. The chief trouble with Wolf grafts is their marked disposition to contract. However, where it is necessary to "fill in," they furnish a means of building up lacking parts that make them indispensable. The effect of their contraction can be avoided in a large degree by making them of ample size, and in exercising great care in their preparation, avoiding traction, and reducing their manipulation to the minimum.

The dressing consisted of an extremely thin layer of absorbent cotton wet in normal saline solution, over which was placed a dry pad of cotton covered with some impervious material, the whole being swathed in gauze and bandages to secure quietude of the parts and maintain equable temperature.

DISCUSSION. Dr. A. Bulson agreed with Dr. Worrell in regard to the merits of the Thiersch and Wolf grafts. The Thiersch graft was much better because it was more flexible. On the other hand, the speaker believed that a properly trimmed Wolf graft would oftentimes give a quicker and more satisfactory result than a Thiersch graft. Attention was called to the value of scarlet salve in bringing about epidermization where the grafts failed to cover the entire surface, where there were eyelets of raw tissue, and where the Wolf or Thiersch graft had not taken. He had seen excellent results in such cases by keeping these areas covered with salve which was so highly recommended by skin men.

Paul Guilford,
Secretary.

WILLS HOSPITAL OPHTHALMIC SOCIETY.

DR. S. LEWIS ZIEGLER, M. D., CHAIRMAN.

MAY 4, 1914.

(Continued)

The other symptoms are those which result from pressure on the cranial nerves and other structures. Pressure on the olfactory nerve gives loss of smell; on the oculomotor nerve, ptosis and involvement of the muscles of the eyeball. If there is pressure on the uncinate lobe, there occur peculiar convulsions, first described by Hughlings Jackson—the so-called uncinate form of fit. Dr. Weisenburg had had such a patient several years ago, on whom Dr. Frazier had operated. When standing up or walking, he would suddenly begin to smack his lips and smell a peculiar odor. He could not describe this odor, but said that it was different from anything else. He also tasted something that he described as metallic. Then he would fall in a fit. He had uncinate convulsions, due to irritation of the uncinate lobe, which is associated with the center of smell and taste.

If the tumor still increases, it presses on the cerebral peduncle. The foot of the peduncle transmits motor fibers chiefly.

Recapitulating, Dr. Weisenburg said that the first symptoms are visual, embracing involvement of the color perception in the upper outer part of the visual field, followed by loss of form perception. The second symptom is optic atrophy; the third, oculomotor palsy; and the fourth, uncinate disturbances.

The best way in which to diagnose a pituitary tumor, he continued, is by the X-ray. He then exhibited three sets of X-ray plates taken by Dr. Pfahler. In one, the patient had the following group of symptoms:—There was first, loss of menstruation, followed by drowsiness and headache. Ophthalmoscopic examination demonstrated loss of the upper, outer part of the visual field. The diagnosis of pituitary tumor was then made. The tumor was not in the sella turcica, but above; as could be made out clearly from the plate.

In contrast, Dr. Weisenburg showed a second case, in which the tumor was very large, and was located within the sella turcica, there being absorption of that part. He then referred to the work of Cushing, who makes the following arbitrary differentiation of the glandular symptoms: There may be (1) increase of excretion, or hyperpituitarism; (2) loss of secretion, or hypopituitarism; (3) a combination of loss and increase, which is really what occurs in most cases. If there is an increase of secretion, there may be overgrowth of tissue. If this occurs in a young person, there results gigantism. Dr. Weisenburg showed a patient of that type before one of our societies during the past winter. The boy was sixteen years old, and was six feet, seven and a half inches in height. Besides, he was formed like a woman, and the genital organs were undeveloped. When this condition occurs in an older person, in whom the epiphyses have ossified, acromegaly results. If there is a loss of secretion, or hypopituitarism, in a young person, there is lack of growth, with fatty deposits all over the body, and infantile sexualism or a hypoplasia of the sexual organs. Besides, there is increased tolerance for carbohydrates. In an old person with hypopituitarism, if a woman, there may be loss of menstruation, fatty deposits and increased tolerance for carbohydrates, in addition to the focal symptoms. The majority of cases, however, combine both factors. Personally, Dr. Weisenburg had never seen a clear-cut case of either hyper- or hypopituitarism, but always a combination of both.

A Case of Hypophysis Disease.

Dr. J. Milton Griscom and Dr. E. H. Goodman reported the following case of hypophysis disease:—The patient, Francis W., white, aged ten years, had applied to the Eye Dispensary of the Pennsylvania Hospital, under the service of Dr. James Thorington, on December 7, 1912. He complained of poor vision with headaches, extending over a period of several years, with some aggravation of these symptoms during the past few months. Vision, at the time of this first visit, equaled O. D., 20/40, and O. S., 20/40. With S. plus 0.75, O. D. equaled 20/20; and with S. plus 1.00, O. S. equaled 20/20. Externally, the eyes were negative; and the eyegrounds showed no pathologic changes, aside from a congested retina and some overfullness of the vessels. The visual fields showed a marked concentric contraction for both form and color. In order that the case might be studied more thoroughly, the patient was admitted to the Medical Ward, and the following history obtained:

Francis W., born February 22, 1902, aged twelve years; admitted, April 23, 1914.—The patient has always been sick.

Has had typhoid fever, chicken pox, pneumonia, scarlet fever, measles, whooping cough, nervous prostration (1 year old) and nerve exhaustion. Never had any injury to head.

Was a tall baby when born, but was not fat. Weight, 9 pounds. Began to walk when two years old (late), but his mother had to carry him until he was nine. Was always sick; and when he became sick, had to be carried, as he then lost all power in his limbs. Mother seems to think he was bright as a baby (eight months old baby).

Patient went to school at eight years. Could not go before, as he was always sick. Schooling was continually interrupted by illness. Has been going to school irregularly for a year. Is in Grade 3 B. Should be in 6th Grade at twelve years.

Can read and spell O. K. Cannot write well. No good at mathematics. Does not play with other children. Is always tired. Has no energy. No appetite lately, but ordinarily has a voracious appetite.

Is melancholy at times, on account of mother scolding him. Is disagreeable to sister. Father scolds him because he is not bright.

Is much bigger than boys of his own age. Stronger than most boys (doubtful). Has headaches all the time, in forehead and in both eyes.

Sleeps poorly; but at times, sleeps all the time.

Father is said to be bright. Is a patrol driver, and weighs 250 lbs. All patient's family big.

Large boy, adipose type. Ears prominent; head large. Eyes throughout, negative.

Measurements are all increased for a boy of his age.

Penis, rudimentary. Left testicle down in scrotum.

Weight, 118½ lbs. Average weight, 81.6 lbs. for that age. A boy of 15½ years weighs 118½.

Height, 4 ft., 11¾ in. Average height for age, 152.0 mm. His is 1426 mm.

There is increased tolerance for levulose, 200 grams being assimilated without producing levulosuria. No polyuria.

The case was diagnosed as one of hypopituitarism.

DISCUSSION ON PAPERS OF DR. WEISENBURG AND DRS. GRISCOM AND GOODMAN.

DR. WILLIAM ZENTMAYER said that all were very much indebted to Dr. Weisenburg for his lucid explanation of this peculiar symptom complex, and that there were some points in the symptomatology that he would like to speak of. One was that while the typical field defect is bitemporal hemianopsia, this is not always found. Homonymous hemianopsia is not rare in pituitary disease. Another eye-symptom is the presence of a central scotoma.

Regarding the effect of the tumor on the nerve paths and the checking of conduction, Dr. Zentmayer said that he had had under observation for nineteen years a woman with bitemporal hemianopsia. For twelve years, she had shown no change in her vision. At first, she had had hemianopsia for color only. She had then developed it for form. Subsequently, she ran on for twelve years with no change whatever. There was no atrophy; but there was always present a slight blurring of the nasal border of the disc and overfulness of the veins.

Fifteen years after he had first seen her, a change came over her fields. The field began to increase toward the temporal side. Eighteen years after the first symptom had developed, she suddenly gained almost a full field. Of course, it was a contracted field; but it had an extent of fifteen or twenty degrees on the nasal side, as well as on the temporal. She died soon after this, and no opportunity was afforded to make a post-mortem examination. She had very pronounced acromegalic symptoms.

With regard to the other symptoms, Dr. Zentmayer said that he had seen a case in which the acromegaly was very incipient. The fields showed some contraction of the upper and outer part. The man was forty-five years old. Dr. Zentmayer had known him when he was younger, and he was then very handsome. When seen after an interval of ten or twelve years, Dr. Zentmayer found quite a change in his face. The patient himself had not noticed it, and neither had his wife, they having become gradually accustomed to the change. There was also a little grayness of the optic nerve. The patient likewise had a symptom that could not be explained as a direct symptom of the disease—a weakness of accommodation. An X-ray picture was taken, without the radiographer's having any idea that the existence of a tumor was suspected. The man was radiographed for the purpose of detecting sinus trouble; but the report was that if a tumor of the pituitary was suspected to exist, this was probably the correct diagnosis. The case showed very clearly what Dr. Weisenburg had pointed out about the fields.

Regarding tumors of the uncinate, Dr. Zentmayer said that he had then under observation a man fifty-eight years of age, with no ocular changes whatever, yet with marked uncinate symptoms. He would lose consciousness while sitting at the table; and, after two or three minutes, would wake up again. His family could notice that he did not know anything that was going on during the interval of unconsciousness. The man has a large business, which he attends to regularly and well, except when he gets these lapses of consciousness. At such times, however, he will transact a piece of business, forgetting afterwards that he has done so. He has peculiar lip movements, and he has also taken on a peculiar levity.

Dr. William C. Posey said that one of the first cases of this kind that he had had an opportunity to study in private practice was in a lady who had lost the sight of her left eye because of pressure on the optic chiasm, and had temporal hemianopsia in the right eye. Her most marked symptom was a diminution in the light sense, due to involvement of the macular fibers in the right optic nerve, a symptom to which Dr. Weisenburg had called attention.

Dr. Posey thought that the most interesting thing in this connection that had come out within the last year was concerning the treatment of this affection. The questions to be asked were, "What are you going to advise?" and "Is it safe to recommend an operation when the vision is still good or not?" Dr. Weisenburg had said that the prognosis for the restoration of vision is good, even though it be very low, provided that there is not a great deal of optic atrophy. Dr. Posey agreed with this view, but considered it difficult to say how much atrophy there is in retrobulbar cases. He cited the case of a young medical man in this city, who was absolutely blind in one eye for a year or more, yet was operated on by Dr. Cushing and had restoration of vision in the blind eye. Dr. Posey had been rather chary about recommending an operation, either by Cushing's, or by Frazier's method, because of the risk of failure, and because of the danger to the life of the patient.

Dr. Dewey reported a case of cilia in the anterior chamber, in a patient from Dr. Zentmayer's clinic, eight years old, who had come to the hospital on the 25th of the preceding March, giving a history of having had a hair blow into his left eye while he was getting his hair cut, four years before, and stating that the hair was still there. The vision was 6/6 in the right eye, and 6/9 in the left. There was a small cicatrix on the cornea of the latter eye, with a cilium fixed in it at one end, and apparently going right behind the iris, and between the iris and the lens, up and out. The distal end projected diagonally across the anterior chamber.

The boy had complained of considerable pain for four days prior to reporting at the clinic. There was, besides the slight cicatrix on the cornea, a very slight opacity of the lens; but this was rather hard to detect. There was no sign of irritation, and the eye was white and quiet.

Dr. Dewey referred to Collins and Mayo, who state that giant cells, similar to those found in tubercles are apt to form around cilia implanted in the eye, and that they are probably derived from the endothelium of the blood- and lymph-vessels and have a phagocytic function.

These authors also state that if the root sheath of the hair is carried into the eye with it, the cells composing the root sheath proliferate and form a funnel-(?) like epithelial tumor or cystic growth, lined with laminated epithelium. When the growth is cystic, the entire anterior chamber may become completely lined with epithelium, obstructing the exits of intraocular fluids and producing a glaucoma.

There was no cystic growth here, and no formation of any kind around the hair; but the boy was positive of the pain in the eye. There was no difference in the refraction, and no reason why one eye should have a lower amount of vision than the other, except the slight opacity on the lens. Dr. Dewey thought that probably Mayo's explanation of the formation of an epithelial lining might apply to this case, because there was a wound of the cornea, and it might have proliferated through the wound. He believed that the boy had a slight attack of glaucoma.

Dr. Ziegler was sorry that the patient of Dr. Dewey was not present, because such conditions are rare. He recalled that during his Residentship at Wills Hospital, there had been three patients of the kind, whose cases are reported by Dr. Harlan in the first volume of the Report. The first patient was an Italian, who had been baling hay or straw, and had been struck on the brow by the end of a piece of wire. While there was no wound of the brow or lid, there had been a puncture of the cornea; and four cilia were found in the anterior chamber. Two of them protuded through a fistulous opening in the cornea. Cataract occurred, and the man came to the clinic one morning on account of a peculiarly severe pain every time he shut his eyes. Dr. Ziegler extracted the two cilia that projected through the fistulous opening in the cornea, and then turned the patient over to Dr. Harlan in the afternoon. A few days later, a case of the same sort occurred in the service of Dr. Oliver; and then, one in Dr. Risley's service.

In the first case, an iridectomy was done within a few months, the lens debris being removed, together with the two remaining cilia. There were no signs of proliferation about the hair bulbs. They had been there for a number of months, and there was a chance for proliferation to have taken place; but none had occurred.

The case that occurred in Dr. Oliver's clinic was in a farmer, who also was baling hay and was struck by the end of a wire. In Dr. Risley's case the accident had occurred in a blacksmith's shop, where a hot nail had struck the patient's eye.

Dr. Zentmayer said that the interest of Dr. Dewey's case would lie in seeing the patient. A mistake in the diagnosis would be almost excusable, because of the resemblance of the condition to retained pupillary membrane. It was only by watching the contraction of the iris and the synchronous movement of the free end of the hair that the diagnosis could be made. In the absence of a history that could be depended on, the diagnosis was difficult. Dr. Zentmayer mentioned another form of implantation cyst that occurs in connection with these cilia, which causes a separation of the layers of the iris, as the result of the introduction of the hair into the stroma.

Dr. Picard related a similar case in Dr. Fisher's clinic. It occurred in a young woman who, while in a butcher's shop, was struck in the eye by a part of a splinter of bone. Dr. Fisher did a curettement, and later did a second. After the second operation, he saw the cilia free in the anterior chamber. The patient has been under observation for five years, or longer. The hair has never caused any irritation. She comes in twice a year for examination. She never has any pain, although the cilia can be seen moving very freely.

A Case of Disciform Keratitis.

Dr. William Zentmayer reported a case of probable Disciform Keratitis. It was wanting in many characteristics of that condition, but was an interesting and rare corneal affection. The man first came in a month ago, with some inflammation of the eye and the ordinary accompanying symptoms. There was a slight haze in the central part of the cornea, but the most prominent lesions were the opacities underneath the epithelium, between the central opacity and the periphery. These were small (1 mm. to ½ mm. in diameter) and greenish. The case resembled very much Fuchs's superficial punctate keratitis. As the case got better, so far as the inflammation was concerned, the central opacity became denser and took a disc-like form; but it had not the sharply defined margin that Fuchs describes. Later writers have not found the peripheral margin so dense as he described it to be at first, and have detected branching striae permeating the stroma of the cornea. Subsequent cases have shown, very often, associated with the disciform opacity, blood-vessels in the stroma. These cases are the same as the cold abscesses of the earlier writers, according to Fuchs. The infection is so mild that the cornea is able to resist it, and prevent suppuration and open ulcer. Rarely is there a break in the epithelium. This view has not been sustained by others. Peters, particularly, and Verhoeff have contended that the condition is a neuropathic one; but Moeller had the opportunity of studying an eye that had been the seat of disciform inflammation, and he confirms the view of Fuchs that it is a low-grade infective process.

Dr. Posey said that some years ago he had reported two cases of disciform inflammation of the cornea, more or less typical, with a sharply defined margin. While he did not think that Dr. Zentmayer's case was that at this time, he believed that it might develop into it. He stated that in his opinion, the cases that he has observed, among which are several of a typical form, originated in injury of the central epithelial tissues. He believed that a neuropathic element might play an important part, but considered it to be, in the first place, trouble coming from without.

Report of an Unusual Case of Congenital Cataract.

Dr. William Campbell Posey referred to a child of seven months, totally blind and with both lenses cataractous.

upon whose right eye he had recently operated by discission. Although the capsule of the lens had not appeared thickened in the examination by oblique light made previous to the operation, he had experienced great difficulty in introducing the knife-needle through the capsule, the lens mass receding before the knife, and becoming indented like a small cyst. Perforating into the interior of the lens was not followed by the escape of lens matter into the anterior chamber; nor, when a second attempt at needling was made, two weeks later, was there any evidence that the first procedure had had any effect upon the cataract. The second attempt was largely a repetition of the first, and had an equally negative result. After the lapse of another two weeks, the anterior chamber was opened with a keratome, and an effort made to drag out the lens mass in the capsule by means of forceps; but this procedure was only partially successful, as the major portion of the now hardened lens matter remained *in situ*. Dr. Posey stated that two months had elapsed since the last operation, but the pupil was still blocked. He purposes to make a fourth attempt to clear the still partially blocked pupil.

An Unusual Case of Puerperal Blindness.

Dr. Posey gave the notes of the case of a woman, thirty-three years of age, a primipara, who had lost her sight during the eighth month of pregnancy, in consequence of renal complications; vision in each eye being reduced to counting fingers at half a meter. The ophthalmoscopic findings were very striking, the picture being that of extreme edema of both retinae, which were immensely thickened by the edema and were extensively detached below. The blood-vessels were much dilated, very tortuous; flame-shaped and round hemorrhages surrounded the discs. Caesarean section was performed by Dr. Hirst, and the patient was safely delivered of a healthy baby. Vigorous depleting measures were adopted, and vision rapidly rose as the edema disappeared. The patient was able to leave the hospital a month after labor was induced, with vision in the right eye equaling 5/40; and in the left eye, 5/60. A severe neuritis still persists in each eye, Dr. Posey stated; but numerous small heaps of pigment alone give evidence of the previous retinitis.

The speaker then referred to the importance of ophthalmoscopic examination in all cases of pregnancy in which any form of toxemia is threatened, and mentioned several cases that he had previously reported, in which marked ophthalmoscopic changes were present without albumin's being found in the urine—a faulty action of the liver being, in all probability, the cause of the toxemia.

Secondary Glaucoma.

Dr. Zentmayer said that he had had under observation for five years a case of secondary glaucoma. The eye had a very high tension, and there was a very deep anterior chamber, with a hazy cornea and very slight injection. The point of interest was the extremely high tension, with scarcely any pain. A few days before, Dr. Zentmayer had trephined the globe. Although the patient had been under observation for five years, he had not before felt it wise to operate; but since the development of bullous keratitis, he considered that some operation was called for. He had never felt safe in doing any other operation than trephining. Just before the operation, the tension was 60. A peripheral iridectomy, with the trephining was also made. The keratitis has since improved decidedly. There remains simply a haze; whereas at first, there were large vesicles. The tension has become minus, and in Dr. Zentmayer's opinion the light-perception is better than it was. In the other eye, there was a very questionable pathological excavation, which had not changed in the five years that he had been under observation.

(Signed) J. Milton Griscom, M. D.,
Secretary.

ST. LOUIS MEDICAL SOCIETY, OPHTHALMIC SECTION.

May 6, 1914.

Report of a Traumatic Paralysis of Both External Recti. Dr. Frederick E. Woodruff.

About the 25th of March, Richard L., a boy four and one-half years of age, fell through a cellarway a distance of eight feet, striking on his shoulder and showing a slight abrasion at the side of the nose. Those were the only marks of injury that could be found. Ten days after the injury I was called to see the patient and could find no evidence of eye disturbance except a double convergent squint with a paralysis of both external recti. The convergence was possibly exaggerated, but he certainly had no power over either external rectus. I was told that at the time of the injury and for a week afterwards he had had no temperature, no signs of any paralysis except the ocular paralysis, no hemorrhage of any kind, no trouble with the ear, no sign of fracture at the base, only a concussion of the brain with this double external paralysis and internal convergence. No treatment had been instituted beyond a slight purging and keeping the child as quiet as possible in bed.

In about three weeks the left eye began to have slight movement beyond the median line and up to about three days ago there was no movement in the right eye beyond the median line. The child is up and about and plays as usual. I have taken his refraction, which is about two diopters of hypermetropia, and have given him about one diopter correction, thinking that he might not accept the full measure, and am trying to give him not too much. So much for the report of the case.

The abducens nerve has its nucleus beneath the floor of the fourth ventricle in the knee made by the fibers of the facial nerve as they pass upward and then outward. It is not probable that any of the axis-cylinder processes of these cells are associated with the fibres of the facial nerve. The fibres of the abducens nerve on leaving the dorsal and inner sides of the nucleus pass ventrally and make their exit at the junction of the pons with the medulla oblongata and near the median line. The nucleus is placed a little more cerebralward than is the point of exit of the nerve, consequently the fibres pass a little spinalward in their exit from the brain stem. The close association of the abducens nucleus with the fibres of the facial nerve explains the occurrence of paralysis in the distribution of these two nerves when a lesion is situated in the lower part of the tegmentum of the pons. The nearness of the two abducens nerves to one another at their point of exit from the pons explains the paralysis of both external recti muscles in basilar meningitis. At the point of exit at the junction of the pons and the medulla, the fibres of the abducens nerve become united into one bundle. From here to the exit from the skull through the sphenoidal fissure, the course of the nerve is long, and, consequently, paralysis of the external rectus muscle is not uncommon from intracranial lesions.

Double sixth nerve paralysis is relatively frequent in basal disease, when the latter is situated centrally in the posterior fossa (when both anterior pyramids of the medulla may be pressed upon, with consequent motor symptoms in the limbs). Monolateral sixth nerve paralysis is also not infrequent from pressure as a result of fracture of the base. The sixth nerve is liable to be injured, owing to its intimate connection with the dorsum sellae and the periosteum in the neighborhood of the apex of the petrous portion of the temporal bone, which latter it is stated is very apt to be cracked in these cases. It is recognized that sixth nerve paralysis may be caused by fracture of the base without coma, paralysis of other cranial nerves, or the usual symptoms of basal fracture being present. In such cases, it may not be possible to say, especially if both sides be implicated, whether the lesion is basal or nuclear; if the lesion appears partially, it points to nuclear lesion, especially if polyuria is present.

I will also say that there was no polyuria present in this case; nor was there sugar present in the urine, as is sometimes found in lesions of the fourth ventricle.

E. A. Shumway, in a recent paper on traumatic paralysis of the external rectus, gives the following statistics regarding the frequency of abducens paralysis: Van Nes, in 1897, found three cases in eighty-two fractures of the skull; Brun, in 1903, found it but ten times in 470 cases; Graf (1903), four cases out of ninety; Liebrecht saw five in 100 cases. Purtcher, writing in 1888, had collected forty-six cases of intracranial traumatic abducens paralysis, thirty-six of these being probably direct, while eight were secondary results of the traumatism. The paralysis was unilateral in thirty cases, bilateral in thirteen, and three cases undetermined.

DISCUSSION.

What has been the treatment?

Dr. Woodruff: Nothing except glasses to correct some of the hypermetropia, so as to avoid as much convergence as possible, thinking that by putting the accommodation at rest there would be less effort at convergence. I expect to increase that correction as soon as I can, but this accident happened only the last of March, so I have hardly had time to do very much.

Dr. Green: Did I understand you to say that the outward motion in one eye was somewhat better than at first?

Dr. Woodruff: Yes, it is decidedly better. He can move the eye beyond the median line; that is, the left eye. Up to a few days ago he was unable to move the right eye beyond the median line.

Dr. Green: I do not know the literature of that bilateral abducens palsy. Are there any cases in which it has been dedetermined that a hemorrhage was the cause, a hemorrhage of the base?

Dr. Woodruff: I could not find any. All that I could find seem to support the idea that there must be a fracture at the base without any other symptoms. I did not see the child for ten days after the injury, but I was told by a competent surgeon who was the attendant that there was no sign of fracture so far as he could determine.

Dr. Green: Was there no X-Ray taken?

Dr. Woodruff: No, there was not.

Dr. Hardy: You say he had two diopters of hypermetropia, and you gave him a correction of one diopter. Why did you not give him a full correction?

Dr. Woodruff: He is a little chap, four and a half years old, and very restless, and it was with difficulty that I got the two diopters at the first. I thought I would give him the one and try him again a little later. (Ten days after the above report, the patient was again seen and there is a decided improvement in the muscular action. It is now possible to rotate both eyes at will. The convergence is lessened. When I found that the left externus had begun functionating, atropin was used in that eye in order to force the use of the right eye.)

Dr. M. Hayward Post, Jr.: I had a case not long ago of bilateral paralysis of the abducens, and I cannot remember the cause of it. I can only remember that the treatment was just to correct the hypermetropia.

Dr. Woodruff: Was it traumatic?

Dr. Post: I cannot recall.

Dr. Frederic E. Woodruff (closing): The prognosis in these cases is, as a rule, I believe, very uncertain. Some improve and get well, and others do not. This has had a special interest to me, for about two weeks later, on the 24th of April, a man came in with a paralysis of one external rectus and reported have had a facial paralysis at the time that the eye trouble began. The facial paralysis has entirely disappeared, leaving a paralysis of the external rectus. He reports that in December, 1913, he had had a cold and took one capsule of quinin—he does not know how many grains, simply one capsule of quinin—and then went out and got wet. He was riding horseback and about an hour and a half after taking the quinin he noticed that something was wrong with his sight The next morning he began seeing double, and after about a week the eye squinted considerably. He attributed that to the quinin, but on questioning him I found that he had taken quinin previously without bad effects, and I took it that it was one of those cases of paralysis due to exposure, in which the facial and the sixth nerves are both involved and the facial recovers before the external rectus. I found that he had one and one-fourth diopters of hypermetropia, which I corrected. As to the outcome, of course, I can say nothing for that was only on the 24th of April.

Dr. Green: In this case of the little boy, Doctor, are there now any symptoms referable to his injury other than the ocular?

Dr. Woodruff: Absolutely none; there never have been, except for the first three or four days.

Dr. Green: And what were they?

Dr. Woodruff: He was semi-conscious, and would rouse and talk at random and be very drowsy, but since I have seen him, ten days after injury, there has been nothing. He seems a normal child, with no signs of where he struck except a little contusion on one shoulder and a slight abrasion of the side of the nose.

Enucleation in Hemophilia. By John Green, Jr., M. D.

L. O. L., age 33, came under observation Nov. 25, 1912. At the age of 18, the left eye had been struck by the head of a tenpenny nail. The eye was red for a time, but soon cleared and quieted. However, vision slowly failed to practical blindness. The eye remained perfectly quiet until 5 years ago, when he began to have attacks of redness associated with deep, aching pain. Each attack lasted from one to two days, and was thought to be accompanied by "hardening of the eyeball". He was under the care of several oculists, one of whom evidently suspected the presence of a foreign body, as he proposed enucleation. No X-Ray, however, was taken.

Complaint: Recurrent attacks of pain, left, accompanied by photophobia right. Examination: A small, round, reactionless pupil, a very deep, anterior chamber and a tremulous iris of a brownish-red tint suggestive of siderosis. Moderate ciliary congestion, no pain on pressure. Ophthalmoscope: right normal; left aphakia, very faint view of disc (cloudy vitreous.) L. V. 1/25; with + 10 sp. V. 5/25.

R. pupil failed to react to light, though reacting well to accomodation. Inquiry into the general medical history elicited the fact that the patient had acquired syphilis 10 years before, and that fact, together with absent knee jerk and slight Rombergism, indicated an early tabetic process. Wassermann four plus.

X-Ray examination disclosed the presence of a fairly large foreign body, localized in the vicinity of the nerve head. An attempt was made to dislodge the fragment by means of the giant magnet without incising the eyeball. AnX-Ray taken immediately after this attempt indicated that the foreign body had not been stirred one iota from its original bed. Enucleation was then proposed and accepted. The operation progressed without incident until the moment of cutting the nerve, when a copious hemorrhage occurred, which pushed the globe in front of the palpebral aperture. During the few moments required to sever the remaining shreds of tissue adherent to the globe, the loose connective tissue of the lids rapidly filled up with blood so that they became almost boardlike. In the meantime, a fat hernia had protruded itself between the lids and could not be reduced by pressure. Hot bichloride compresses were applied. After fifteen minutes, the hemorrhage having practically ceased, I was able fairly to approximate the conjunctiva with 3 interrupted sutures. However, there remained this herniated mass outside the lids. A pad copiously smeared with vaseline was applied to the lids and herniated mass, and a pressure bandage applied. The following morning, I found the dressings saturated with blood, and on removing them blood continued to ooze, drop by drop, from the herniated mass, which was about the size of a small hen's egg. Dressings were reapplied, with pressure. In the afternoon, the bandage was again blood-soaked. I then began to suspect that I was dealing with a bleeder, and got him to admit that he always bled very freely after trivial injuries. For instance, he would bleed 15 to 30 minutes after nicking his face in shaving. He did not know of any bleeders in his immediate ancestry. I then injected 10 c. c. of normal serum, and a few hours later a similar quantity. Within 12 hours, oozing ceased and recovery took place without further hemorrhage. The herniated mass gradually receded, and at the time of his departure to his home in Memphis, on Dec. 18th, he was able to wear a small shell eye. At this time, there was a complete ptosis which I presume was caused by pressure of the densely infiltrated orbital tissue on the branch of the third nerve which innervates the levator.

I was somewhat fearful lest the levator paralysis might be permanent and so asked Dr. E. C. Ellett, of Memphis, to seek an interview with the patient and report his condition. Dr. Ellett kindly consented and saw Mr. L. on Nov. 3, 1913. Dr. Ellett writes: "Replying to your note of the 30th, I called up Mr. L. and he came by the office this afternoon. I am glad to be able to tell you that he seems to be all right in every way. Power has returned to the lid and the only thing that troubles him now is the discharge from the socket. I suggested to him that if he would try a Snellen eye instead of the eye shell that he is wearing that he might find it would help this trouble."

In view of the fact that enucleation is an operation in which fairly large vessels and a great many capillaries are divided, and in which our resources for controlling hemorrhage are limited, it would be well to make it a practice to inquire of every patient upon whom we propose to remove an eyeball, whether or not he is a bleeder. If there are any reasons for suspecting the presence of hemophilia, it would be well to guard against a possible hemorrhage by the prophylactic injection of normal serum. This procedure is harmless, has been used with success in general surgical work, and would probably avert the disconcerting occurrence here described.

DISCUSSION.

Dr. W. F. Hardy: I had a case in a man almost parallel to this, but he did not give the history of being a bleeder. Before the eye was completely removed, there was a tremendous puffiness of the tissues which impeded the removal of the eye, and by the time the eye was out there was a protrusion as big as a small egg. One could not see any lids, for they were completely hidden, but the bleeding at that time was not so very great. About two days after, the whole side of his face was black and blue from the blood seeping down between the tissues. I applied a bichloride dressing, and the condition slowly subsided.

(Continued)

NEWS AND NOTES.

Personals and items of interest should be sent to Dr. Emory Hill, 122 South Michigan avenue, Chicago, Ill.

As these columns go to press on the 15th of the month previous to publication, contributors will kindly send in their items before that date.

Prof. Dr. Herman Kuhnt of Bonn, Germany is serving with the German army.

Dr. Ascher, assistant to Prof. Dr. Elsching in Prague is said to be a prisoner in Russia.

Dr. Henry S. Gradle of Chicago has been elected president of the North Shore Branch of the Chicago Medical Society.

The North of England Ophthalmic Society meets at Liverpool on December 10, 1914, under the presidency of Mr. Hill Griffith.

Dr. MacWhinnie of Seattle, Wash., passed through Chicago recently returning from a trip to Boston, New York and Philadelphia.

The University of Toledo (O.) has established a school of optometry, such as was recently organized at the Ohio State University. O. L. Altenburg will be in charge of the work.

A campaign against trachoma has been instituted in Texas City, Texas, where the Mothers' and Teachers' Association of the schools is caring for those children who are unable to pay for their treatment.

The following were elected officers of the Section on Eye, Ear, Nose and Throat diseases of the Southern Medical Association at the recent meeting in Richmond, Va.; chairman, Dr. Joseph B. Green of Ashville, N. C.; vice-chairman, Dr. Thomas W. Moore of Huntington, W. Va.; secretary, Dr. Edward H. Cary of Dallas, Texas.

Dr. Edmund Landolt who has been in Berne, Switzerland, owing to illness in his family, has returned to Paris. Dr. Landolt has two sons in the French Army, one attached to a hospital corps, the other in the artillery.

The report of a fatal epidemic of rabbits in the vicinity of Cincinnati is of interest in connection with the recent finding of a rare case of conjunctivitis and the establishment of its relation to the epidemic of squirrel plague as observed in California, as reported in the Record by Dr. Vail of Cincinnati in a recent issue.

The following appointments are announced:

Dr. E. K. Findlay, assistant surgeon, the Illinois Charitable Eye and Ear Infirmary, Chicago, succeeding Dr. W. H. Wilder, resigned.

Mr. V. D. Nimbkar, ophthalmic house surgeon, Leeds General Infirmary, Leeds, England.

Mr. John P. Henry, professor of ophthalmology and otology, University College, Galway.

Mr. A. J. Ballantyne, lecturer on ophthalmology, St. Mungo's College, Glasgow, vice Mr. A. Maitland Ramsay resigned.

Dr. John B. Ellis, ophthalmologist to St. Joseph's Hospital, Chicago.

We regret to see that Prof. Anton Elschnig of Prague has taken such a radical stand regarding cosmopolitanism in medicine. In the Medizinische Klinik for October 11 he advises that for the future it should be Germany and Austria against the world. No foreign students should be admitted to the Universities or allowed access through journals, etc., to German medicine.

Prof. Orth in the same journal counsels Prof. Elschnig to be moderate, however, so there is a possibility that we outsiders will not be entirely abandoned. It is comforting to feel that the public in America will not be wiped from the face of the earth for lack of German medicine.

"Eye Talks."—Most people and a few physicians fail to distinguish the difference between an optician and an oculist. While the optometrists are moving heaven and earth (and the State University) to create a new "profession," a half-way stop between optician and oculist—or, rather, an incompatible mixture of the two—it is a relief to know that there is at least one optician in the State of Ohio who has a clear vision.

E. B. Brown, of Cleveland, has been running a very instructive series of talks in the Sunday Plain Dealer. He says:

"This first 'talk' of the series is to emphasize a truth which if fully understood by all would prevent endless eye trouble.

"It's this—an optician is NOT an oculist.

"An oculist is a physician who specializes in the treatment of the eye. He does not sell glasses.

"The skilled optician is the highly trained mechanic whose business it is to carry out in every particular the directions of the oculist who prescribes.

"Your eyes are altogether too precious for you to take chances with them. Be sure of proper treatment by going to an oculist.

"And then—if he orders glasses for you—see that they are made and fitted by a skilled optician.

"We DO NOT Examine Eyes."

This is true constructive teaching. The public needs more opticians of E. B. Brown's stamp. Physicians would do well to encourage men of his character.—(J. E. T., *Ohio State Med. Jour.*)

BOOK REVIEW.

Glaucoma, A Symposium Presented at a Meeting of the Chicago Ophthalmological Society, November 17, 1913. Edited by Willis O. Nance, M. D., President Chicago Ophthalmological Society (1913): Ophthalmic Surgeon, Illinois Charitable Eye and Ear Infirmary; former Oculist and Aurist, Cook County Hospital; Editor Journal of Ophthalmology and Oto-Larnygology, and Wesley Hamilton Peck, M. D., President Chicago Ophthalmological Society (1914); former Professor Ophthalmology, Chicago Eye, Ear, Nose and Throat College; Assistant Surgeon, Illinois Charitable Eye and Ear Infirmary; Ophthalmic Surgeon, Oak Park Hospital. Chicago Medical Book Company, Chicago, 1914. Cloth, 150 pages. Price $1.50.

CHICAGO EYE CLINICS.

Hour.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
9 A.M.	Richard S. Pattillo (P.-G.) G. W. Mahoney (Poli.) R. B. Stephenson (P.-G.)	*Geo. F. Suker (P.-G.) C. H. Francis (Poli.) A. Duncan (P.-G.)	W. F. Coleman (P.-G.) S. M. Hager (Poli.) H. N. Lyon (P.-G.)	G. W. Mahoney (Poli.) Rich'd S. Pattillo (P.-G.) R. B. Stephenson (P.-G.)	C. H. Francis (Poli.) R. B. Stephenson (P.-G.)	S. M. Hager (Poli.) C. W. Hawley (P.-G.) H. J. Morlan (P.-G.)
10 A.M.	Brown Pusey (N.W.U.) Geo. T. Jordan (N.W.U.) Robert Blue (N.W.U.) Every day, 10-12 A. M.					
1 P.M.	M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) Emily Selby (Inf.) *H. W. Woodruff (Inf.) *Oscar Dodd (Inf.) C. A. Leenheer (Inf.) D. W. Eiss (Inf.) E. R. Cressley (Inf.) C. C. Clement (Inf.) E. V. L. Brown (County) and Geo. F. Suker (County) Daily, 2:30 P. M.	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) E. K. Findlay (Inf.) Wm. E. Gamble (Inf.) J. B. Loring (Inf.) *Wm. H. Wilder (Inf.) S. L. McCreight (C.C.S.) E. V. L. Brown (Inf.) Robt. Von der Heydt (Inf.) L. G. Hoffmann (Inf.) A. P. Hunneman (Inf.) M. Goldenberg (Inf.) Francis Lane (Inf.) H. Walker (Inf.)	M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) Emily Selby (Inf.) *H. W. Woodruff (Inf. *Oscar Dodd (Inf.) C. A. Leenheer (Inf.) D. W. Eiss (Inf.) E. R. Cressley (Inf.) C. C. Clement (Inf.)	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) *Frank Allport (St. Luke's) *Frank Brawley (St. Luke's) E. K. Findlay (Inf.) Wm. E. Gamble (Inf.) *Paul Guilford (St. Luke's) *Casey Wood (St. Luke's) *T. A. Woodruft (St. Luke's) J. B. Loring, (Inf.) *Wm. H. Wilder (Inf.) S. L. McCreight (C.C.S.) E. V. L. Brown (Inf.) Robt. Von der Heydt (Inf.) L. G. Hoffman (Inf.) A. P. Hunneman (Inf.) M. Goldenberg (Inf.) Francis Lane (Inf.) H. Walker (Inf.)	M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) Emily Selby (Inf.) *Oscar Dodd (Inf.) C. A. Leenheer (Inf.) D. W. Eiss (Inf.) E. R. Cressley (Inf.) C. C. Clement (Inf.) H. W. Woodruff (Inf.)	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) E. K. Findlay (Inf.) Wm. E. Gamble (Inf.) J. B. Loring (Inf.) *Wm. H. Wilder (Inf.) S. L. McCreight (C.C.S.) E. V. L. Brown (Inf.) Robt. Von der Heydt (Inf.) L. G. Hoffman (Inf.) A. P. Hunneman (Inf.) M. Goldenberg (Inf.) Francis Lane (Inf.) H. Walker (Inf.)
3 P.M.	*Wm. E. Gamble (U. of I.) Wm. H. Wilder (Rush) H. S. Gradle Daily 3-5 (E. M. D.)	R. J. Tivnen (M. H.)	W. Allen Barr (C.C.S.) *Wm. E. Gamble (U. of I.)	Wm. H. Wilder (Rush) R. J. Tivnen (M. H.)	W. Allen Barr (C.C.S.)	Geo. F. Suker (P.-G.) 2-5 H. Cuthbertson A. Duncan
4 P.M.	W. F. Coleman (P.-G.) H. N. Lyon (P.-G.) 2-5	C. W. Hawley (P.-G.) 2-5 J. F. Campbell (P.-G.) H. J. Morlan (P.-G.)	J. B. Loring (U. of I.) E. K. Findlay (U. of I.) G. F. Suker (P.-G.) 2-5 H. Cuthbertson (P.-G.)	C. W. Hawley (P.-G.) J. F. Campbell (P.-G.) H. J. Morlan (P.-G.)	W. F. Coleman (P.-G.) 2-5 H. N. Lyon (P.-G.)	

*Special operative eye clinic.

ABBREVIATIONS:

C. C. S.: Chicago Clinical School, 1844 W. Harrison Street.

E. M. D.: Emanuel Mandel Dispensary, 1012 Maxwell St.

County: Cook County Hospital, W. Harrison and Honore Streets.

Inf.: Illinois Charitable Eye and Ear Infirmary, Peoria and Adams Streets.

M. H.: Mercy Hospital.

Poli.: Chicago Policlinic and Hospital, 221 W. Chicago Avenue.

P.-G.: Post-Graduate Medical School of Chicago, 2400 Dearborn Street.

N. W. U.: Northwestern University, 2431 Dearborn Street.

Rush: Rush Medical College, W. Harrison and Wood Streets.

St. Luke's: St. Luke's Hospital, 1416 Indiana Avenue.

U. of I.: College of Medicine, University of Illinois, Congress and Lincoln Streets.

THE
OPHTHALMIC RECORD
A MONTHLY REVIEW OF THE PROGRESS
OF OPHTHALMOLOGY

Vol. XXIV CHICAGO, FEBRUARY, 1915 No. 2, New Series

ORIGINAL ARTICLES

SCLERAL PUNCTURE FOR EXPULSIVE SUB-CHORIOIDAL HEMORRHAGE FOLLOWING SCLEROSTOMY—SCLERAL PUNCTURE FOR POST-OPERATIVE SEPARATION OF THE CHORIOID.

BY

F. H. VERHOEFF, A. M., M. D.
BOSTON.
(FROM THE MASSACHUSETTS CHARITABLE EYE AND EAR INFIRMARY.)

Expulsive hemorrhage from the chorioid is fortunately not frequent, but when it occurs it always leads to the loss of the eye, judging by the cases that have occurred at this institution. When occurring after operation it is most frequent following iridectomy for glaucoma, owing, no doubt, to the sudden and great reduction in intraocular pressure and to the diseased condition of the chorioidal vessels. Less often it follows cataract extraction. After sclerostomy it also sometimes occurs, but I know of no statistics showing just how often. The case reported here is the only one after this operation that I have personally encountered, but I have examined the eyes from several such cases operated upon by colleagues. No doubt in the same class of cases it will be found to occur after sclerostomy as often as after simple iridectomy. Expulsive chorioidal hemorrhage also sometimes occurs spontaneously, especially in advanced cases of primary or secondary glaucoma.

In the fairly numerous cases of expulsive chorioidal hemorrhage that I have examined pathologically, I have found that the hemorrhage is chiefly confined to the sub-chorioidal space, and no doubt it almost always begins here. The hemorrhage bulges up the chorioid in one or more places and compresses the vitreous. Often there is also more or less hemorrhage from the ciliary body into the anterior vitreous. This does not result from direct extension of the chorioidal hemorrhage, but is probably due to the increased intraocular pressure, as it is in cases of intense glaucoma. In some cases, especially those following cataract extraction or perforating ulcer of the cornea, the hemorrhage breaks through the chorioid and pushes the retina and vitreous out of the eye. These latter cases are, of course, absolutely hopeless, and enucleation should here be done at once.

The following case of expulsive sub-chorioidal hemorrhage after sclerostomy, is briefly reported to call attention to a simple operative procedure that was successful not only in preserving the eye but also a certain degree of useful vision.

The patient, a man aged 60 years, was first seen by me July 14, 1914. His left eye was apparently normal, having normal visual acuity and field, a tension of 32mm., and showing no excavation of the disc. The right eye showed the picture of chronic non-inflammatory glaucoma. The vision was reduced to 20/40 and the visual field was contracted to 30° inwards, 50° outwards, 30° upwards and 15° downwards. The optic disc was deeply cupped and the tension was 72mm. The cornea was clear, the anterior chamber slightly shallow and the eye free from congestion and pain. Treatment with miotics was immediately begun.

July 17, sclerostomy, combined with a large button hole iridectomy, was performed by my method. The operation was done under cocaine anesthesia, and the patient was perfectly quiet and showed no tendency to squeeze his lids together at any time. No difficulties were encountered in the operation, and it was completed up to the point of inserting the conjunctival sutures, when suddenly vitreous began to pour rapidly out of the sclerostomy wound. At least half of the vitreous must have been extruded from the eye when the flow abruptly ceased. The eye had become extremely hard and there was great pain. Only one explanation for the catastrophe was possible, namely expulsive sub-chorioidal hemorrhage, and I therefore considered the advisability of immediate enucleation. I decided, however, to wait. The vitreous was cleaned away from the wound and the conjunctival flap sutured in place.

About four hours later, the thought occurred to me that it might be possible to let out the blood and relieve the condition by scleral puncture, and I at once carried out this procedure. The first puncture was made with a Græfe knife on the nasal side about 10mm. from the corneal limbus. From this only a small amount of blood escaped. A second puncture was therefore made on the outer side. From this a large quantity of blood flowed and the eye partly collapsed. As soon as the knife was removed, the eye filled up again. A third puncture was then made below the second, with exactly the same results. The procedure was then regarded as useless, and the patient was returned to his ward bed.

On the night of the following day the pain, which had somewhat lessened, became more severe and a considerable amount of blood came from the eye so that the bandage required to be changed by the nurse. When seen by me the next day, 48 hours after the operation, the anterior chamber was re-established and contained a large hyphemia. The bulbar conjunctiva was congested and showed marked chemosis.

Nine days after the operation the tension was normal, the chemosis had disappeared, and the hyphemia was almost gone,

On the eleventh day the anterior chamber was found obliterated, probably due to separation of the chorioid. The tension was nevertheless, normal to palpation, and the patient could count fingers at six inches. One week later the anterior chamber had almost completely reformed, the tension was still normal and the vision was 20/200. The patient was then discharged to the out-patient department.

When last seen, two weeks later, Aug. 18, 1914, there was a well marked "bleb" at the site of the sclerostomy and the tension was normal. The anterior chamber was of about normal depth. Ophthalmoscopic examination showed the media clear and the fundus normal, aside from the glaucomatous excavation of the disc.

It will be seen that in this case the expulsive hemorrhage, though very large, was confined back of the chorioid. There was some hemorrhage into the anterior vitreous or zonular space, as indicated by the large hyphemia, but this was not expulsive and no doubt was from the ciliary body or iris. After at least half the vitreous had been pushed out of the eye the hemorrhage ceased. This may have been due to the plugging of the sclerostomy opening by the lens, or to the bulging forward of the ciliary body against the latter. The condition then existing was analogous to a false aneurism, as proved by the gush of blood through the puncture wounds made 4 hours later.

The immediate effects of the scleral punctures were apparently unsatisfactory. Although when the cataract knife was twisted a large amount of blood escaped and the eye partly collapsed, when the knife was removed the eye filled up again and became hard. It was therefore thought that the procedure had proved ineffective because the ruptured vessels had evidently not thrombosed and filled up the enlarged sub-chorioidal space with blood as often as it was emptied.

After the scleral punctures, the pain was relieved for a time but again returned and continued until some time during the night of the following day, when, according to the statements of the patient and attending nurse, there was profuse hemorrhage from the eye. Immediately after this the pain ceased and the eye began to make an uneventful recovery. The explanation of this fortunate outcome is difficult. The most reasonable one that occurs to me is that the bleeding vessels finally became thrombosed and that the pressure of the newly secreted aqueous was then sufficient to force the blood out of the scleral openings and push the chorioid back in place.

Another surprising outcome was that the sclerostomy wound did not close and in fact, gave efficient drainage. This may have been due to the receding of the vitreous from the opening when the chorioid became replaced.

Whether or not this procedure would prove successful in all cases of post-operative sub-chorioidal hemorrhage it is impossible to say. Probably it would not. Certainly, however, it should always be tried, since the only alternative is enucleation. In another case, I should endeavor to stop the vitreous outflow by finger pressure, and to make the scleral punctures as quickly as possible. I should then make a small angular incision in the sclera and excise the apex of the angle with scissors so as to give continuous exit to the blood. In case the hemorrhage did not cease within a reasonable time, or the eye badly collapsed, I should inject normal salt solution into the vitreous chamber by means of a hypodermic syringe in an attempt to force the chorioid back into position.

In cases of spontaneous sub-chorioidal hemorrhage, the procedure might also be tried. In these cases, however, the diagnosis is difficult, the eye is usually already sightless from other causes, and the possibility of intra-ocular sarcoma is not easily excluded, so that, in general, enucleation is preferable.

Scleral Puncture for Persistent Post-operative Separation of the Chorioid.

As a rule post-operative separation of the chorioid is not of serious import, replacement occuring within a short time. Occasionally, however, it persists indefinitely. Within the past year I have encountered one such case following cataract extraction with iridectomy. The extraction was performed by an inexperienced assistant, who carried the incision so far backward into the sclera that it probably opened the sub-chorioidal space. The anterior chamber, after reforming, became obliterated, and the eye became alarmingly soft, without signs of inflammation. This condition persisted unchanged for three weeks when I made a scleral puncture in the upper outer quadrant about 9mm. from the corneal limbus, and allowed to escape a considerable quantity of clear fluid. There was no loss of vitreous, so that all of the fluid evidently came from the sub-chorioidal space. No definite effect was noticeable until after about a week, when the anterior chamber reformed and the tension of the eye returned to normal.

The chorioidal separation could not be seen ophthalmoscopically owing to the presence of capsular membrane in the pupil. The diagnosis was based on the obliteration of the anterior chamber and the softness of the eye, and its correctness was established beyond question by the escape of fluid following the scleral puncture.

THE INFLUENCE OF HEREDITY IN THE DEVELOPMENT OF STRABISMUS.

A Study of 81 Private Cases.

BY

WENDELL REBER, M. D.
PHILADELPHIA, PA.

The question as to whether heredity does or does not have any influence in the development of strabismus has always been complex enough to furnish a certain amount of fascination for those who care to investigate the matter. Because of the varying views as to the pathogenesis of strabismus, the proper place to be allotted to heredity has been by no means fixed. Before

Donders' time, the muscular theory held full sway. With the promulgation of Donders' theory the assumption that hypermetropia was hereditary seemed sufficient to most ophthalmic minds. But inasmuch as the great majority of the human family are born hypermetropic and yet do not squint, the idea that the heredity of strabismus naturally follows the heredity of hypermetropia must be abandoned. Anomalies in the anatomic build of the orbits was then invoked as a determining factor in the heredity of strabismus; the assumption being that because of the way peculiarity of cranial conformation is handed down from generation to generation, peculiarities in orbital build were similarly handed down and the hereditary deficit was thus explained. There is probably some basis for this hypothesis.

From 1880 to 1900 the work of Javal, Parinaud, Remy, Priestley Smith, Schweigger, Hansen Grut, Holthouse, Worth, Harman and others directed attention more and more to the fusion faculty in the genesis of strabismus. Landolt writing in 1886 (Landolt, the Refraction and Accommodation of the Eye. J. B. Lippincott & Co., 1886), after discussing the theories current up to that time, says with most refreshing frankness: "None of the theories we have enumerated finally satisfies us, and we prefer to acknowldege that many cases of convergent strabismus are still beyond our comprehension. This avowal does not cost us much, and certainly less than the building up of theories without foundation and far-fetched attempts at explanation." Parinaud 13 years later (Le Strabismus et Son Traitement. Octave Doin, 1899), defined strabismus as a "vice in the development of the binocular vision apparatus," a definition with which precious little fault can be found in the present state of our science. Worth in 1903 went a step further and urged that "the essential cause of squint is a defect in the fusion faculty," supporting his contention with the statistics growing out of 1729 case histories. This author is strongly of the opinion that heredity has much to do with the production of strabismus. Parinaud (loc. cit.), after remarking that the frequent occurrence of strabismus in certain families has been known, goes on to say: "But direct heredity is not the only influence to be observed in such instances. The parents may transmit a disposition to strabismus without being themselves strabismic. This particular phase of hereditary influence may manifest itself in vices of refraction, in minor cerebral deficiencies and in particular by an antipathy to single vision such as is frequently met with in highly ametropic families." This point is most graphically illustrated in a family which I have recently studied. The father and the mother both present a low compound hypermetropic astigmatism and normal muscle balance. They have three children,—all boys—and all three of them present compound myopic astigmatism with high divergent strabismus that appeared in each instance in the third month of life and increased with each year. In two of the boys the deviation equalled 40 degrees and in the other 60 degrees. On inquiring into the family history it was found that 3 of the father's 5 brothers were highly myopic and 2 of them were the subject of a high degree of divergent strabismus. These three children figure in the series I shall later on refer to. In estimating the relative value of the various factors in the production of strabismus, Holthouse (Convergent Strabismus and Its Treatment. J. & A. Churchill, London, 1897) observes, "Among the most important of these may be counted inheritance." In 120 of his own cases, Holthouse found a hereditary tendency to squint in 36 cases or 30 per cent. He quotes Lang and Barrett's statistics (Royal London Hospital Reports, Vol. XII) furnishing 28.5 per cent showing hereditary tendencies. He credits inherited predisposition with a potent influence not merely in determining whether strabismus shall appear at all, but in causing it to appear at an earlier age than it otherwise might. In this connection I cannot refrain from quoting Browne & Stevenson's (Squint Occurring in Children. Balliere, Tindall & Cox, London, 1901) cogent observation that "a great number of children are evidently prepared to squint, but a considerable proportion of them escape." In Worth's series of 1373 cases (loc. cit.) 52 per cent did not escape. He therefore does not hesitate to say that in any series of cases of esotropia, hereditary influence is a marked feature. In 17 cases of vertical strabismus, Lagleyse (Arch d'Ophtal., XXXII, page 338) found marked hereditary influence. Lagrange & Moreau (Arch d'Ophtal., April, 1907) in a study of 562 private cases, ascribe 38 per cent as traceable to refractive errors and 43 per cent to hereditary predisposition. In von Sicherer's case, (von Sicherer Munch. Med. Wochens. LIV, p. 1231, 1907) the squint could be traced in four generations of one family. H.

Cohn (H. Cohn, Heredity and Treatment of Strabismus, Berlin Klin. Wochensch. XLI. p. 31. 1904), with his usual unerring instinct, emphasized the most important consideration in studying the heredity of strabismus, namely, that the more careful he made his inquiries the larger percentage of cases of convergent strabismus he found that had relatives with similar abnormalities. This is the gist of the whole matter. In a "Clinical and Statistical Study of Convergent Strabismus," N. Y. Med. Jour., Nov. 5, 1904, which I presented before the Medical Society of the State of Pennsylvania in 1904, I drew attention to the fact that "parents are not prone to tell all they know about family defects: and viewing strabismus as a blot on the 'scutcheon (as many of them do) they vehemently assure us that no one else in the family ever has crossed eyes. In private practice the facts come out sooner or later." This contention has been abundantly borne out in the series of cases studied in this communication. All of them were seen and studied in private practice and it was frequently in the third or fourth or even later consultations that the precious information as to heredity leaked out. By adroit questioning I was often able to obtain a long drawn out recital of facts which would somewhere contain the incriminating evidence. Yet in spite of the figures to be presented, showing over twice the percentage adduced in my previous series, I do not hesitate to repeat what I said ten years ago that "just how great a part heredity plays in the development of esotropia will probably never be known as a matter of absolute accuracy."

In the series reported by me ten years ago there were 166 cases, of which 130 occurred in hospital work and 36 in my private practice. In this study 33 per cent showed some hereditary predisposition.

The new series now added embraces 81 cases, all of which were carefully studied in private practice. Of this number 6 were instances of divergent strabismus, the remainder being of the convergent variety.

Of the six divergent cases, one was probably due to very early operative interference for convergent strabismus. As the patient was orphaned (both parents) at 2 years of age, no satisfactory history as to this fact could be obtained. There was some rather suggestive evidence as to a tenotomy that had been done on the left internus, but as the lady declined operation when I saw her (in her 40th year) no trustworthy information on this point could be secured. No history of family strabismus could be had in this case as the lady knew nothing of her relations in Austria. I have mentioned this case somewhat in detail as it would seem to bear exception to the other five cases of divergent strabismus observed. In every one of these five a strong family history was in evidence. One of them gave a history of the father and 3 sisters, all with divergence; one of them had the mother, the maternal grandmother, 2 maternal aunts and a paternal cousin as sharers in the "family stigma," as the patient termed it. The 3 others had 2 brothers who also presented divergent strabismus. Including the one case of unknown related conditions, we have 5 out of 6 divergent strabismics showing strong hereditary tendencies, namely, 83.3 per cent. All of these were the purest form of divergent strabismus occurring in young people absolutely free of any and all forms of nervous disease. It is to be regretted that the number studied could not be greater, but pure divergent strabismus is relatively infrequent. Every case therefore deserves the deepest study from this standpoint.

The 75 cases of convergent strabismus ranged in age from 6 to 50 years of age. As to sex, there was practically no numerical difference, 39 being females and 36 males. In two instances the defect extended through 3 generations, in the one case embracing the patient, a paternal uncle and a grandparent (the uncle's father); in the other case, the patient, his mother, his mother's mother and two maternal aunts.

Of the whole series of 81 cases, 13 (or 16 per cent) stated on repeated questioning that no member of the family or the entire family relation exhibited any degree of strabismus whatever.

In 13 other cases occurring early in the series the family and collateral relations were not inquired after, so that 16 per cent of the series must be put down as *unknown* in their hereditary relation.

The remaining 55 cases are divided into 3 classes:—

1. Those showing hereditary influence in the immediate family.

2. Those showing hereditary influence in the immediate family and cousins.

3. Those showing hereditary influence in the cousins or uncles only.

In group one there were 38 cases; that is, 47 per cent of direct heredity.

In group 2 there were 9 cases; that is, 11 per cent of direct plus collateral hereditary influence.

In group 3 there were 8 cases; that is, 9 per cent of collateral heredity.

In other words, in the whole series of 81 cases, 55 cases, or 68 per cent, gave some manner of evidence of hereditary involvement. The only higher percentage we could find in the literature is attributed to Jensen in the Ophthalmic Year Book for 1905. He found 70 per cent of his series exhibiting hereditary tendencies. We believe, with Cohn, that if this large a percentage can be shown as *admitted* by parents and patients that it does not represent that added percentage represented by those who either cannot or will not furnish the true facts in the case —so that in the end all estimates must of necessity be underestimates.

If anyone should be disposed to comment on the tremendously increased percentage of hereditary influence revealed by this series as compared with the previous series reported in 1904 I need only say that 130 of the cases reported in the first series were hospital cases from whom it was extremely difficult to elicit the real facts. This series embraces private cases entirely and I believe the evidence adduced therefrom can be reproduced in a like series anywhere if the same care and diplomacy in questioning is observed that we were obliged to resort to in our search for the facts.

To those who are interested in the subject of heredity in its relation to strabismus, I would commend the recent contribution of Dr. J. F. Burkholder, which appeared in the July, 1914, number of Ophthalmology. This article on the "Neurology of the Fusion Faculty" is worthy of extended study as it may be that we are at last to learn not only that the fusion faculty is represented in the brain cortex by a center, but just where that center may be. I quote as follows from the concluding portions of his contributions:—"This idea of increased complexity of function following a more complex arrangement of tissue is further emphasized by the fact that there is a distinct separation of the occipital cortex into two clearly defined zones, which are separated by the line of Gennari or Vic. d'Azyr. This line can be easily seen with the unaided eye by sectioning brains hardened in chromic alcohol or Müller's fluid.

From the anatomical data here presented it seems that there is only one conclusion to come to, and that is that the cortex of the occipital lobe has a double function to perform. *These two functions are first the interpretation of visual sensations, and second the fusion faculty which causes the finer adjustments of the extrinsic muscles of the eyeballs.* One of these functions resides in the cells that are external to the line of Gennari and the other belongs to the neurons that are internal to this line; etc., etc." Of course, this is speculation—but it is an alluring speculation. Logically if a center for the fusion faculty exists it should be located somewhere near the visual centers if Nature is to adhere to that marvelous efficiency she displays on every hand. At all events, the search for a fusion center must go on; for a faculty so obviously and importantly related to the binocular visual apparatus must be represented somewhere in the central cortex.

Finally, the one practical import of this study is the necessity laid upon us (as urged by Worth) that in families where squint has been known to occur, special attention must be paid to the development of the eye movements and to the immediate correction of any such abnormality as may appear.

1212 Spruce Street.

A NEW EYE SPECULUM.

BY

A. S. GREEN, M. D.

CHIEF OF OPHTHALMOLOGY, SAN FRANCISCO POLYCLINIC AND POST GRADUATE SCHOOL OF MEDICINE.

AND

L. D. GREEN, M. D.

VISITING AND ASSISTANT OPHTHALMOLOGIST, SAN FRANCISCO CITY AND COUNTY HOSPITAL, MEDICAL DEPARTMENT, STANFORD UNIVERSITY.

Analysis.

The lid problem stated.

Disadvantages of ordinary specula and of digital manipulations.

Relation of the patient.

The new instrument described.

Its advantages over others.

Particular value in cataract extraction.

Manner of use.

A New Eye Speculum.

The problem of separating the lids and adequately, safely, and conveniently exposing the field of operation, especially for the extraction of cataract, has always received a great deal of attention from ophthalmic surgeons. Numerous methods and many instruments have been devised, most of which give a satisfactory exposure indeed, but the difficulty has been to safeguard the eye at the same time against the pressure that is exerted upon the opened globe by the lids. No instrument or method, as far as the writers are aware, has conjointly fulfilled the required conditions, and all the various instruments and procedures thus far devised have had their drawbacks to a greater or lesser degree, and do not insure the eye against danger from squeezing by the lids on the part of the patient during some stage of the operation.

Eye specula, while convenient to use and giving a good exposure of the operative field, have, from the time of Daviel, been properly considered as dangerous instruments. The portion of the speculum beneath the lids provides a fulcrum by which the orbicularis may exert great pressure upon the eyeball. While many operators still make use of it throughout a cataract operation, some remove it upon completion of the incision, and while finishing the operation control the lids with the fingers and some form of lid-hook or elevator; others have discarded the speculum entirely and endeavor to control the lids by digital manipulation alone.

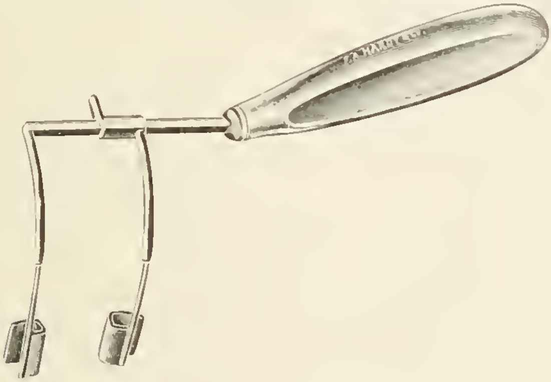
Separating the lids with the thumb and fingers, as followed in some European clinics, neither prevents the orbicular portion of the orbicularis from pressing upon the eye nor the lower lid from gradually slipping up and forcing out lens and vitreous. Equally unsatisfactory are those methods which require changing of instruments and their re-introduction during the various stages of the operation, such practices being accompanied by a certain amount of danger.

No matter how tractable the patient may be an orbicular spasm is apt to be produced through the operator inadvertently pricking the skin of the lids or of the nose with the knife while making the section; or the patient may forcibly squeeze the lids at some time during the iridectomy, delivery of the lens, or even while the toilet is being completed, and thus ruin an otherwise successful operation.

The instrument herewith presented has the appearance of an ordinary eye speculum to which a handle, directed downward and outward, has been attached at an obtuse angle. This handle enables the assistant to hold it in position with a firm but comfortable grasp and without tiring his hand.

The two cross-bars which hold the lid-plates are bent at their outer extremities to conform to the curvature of the cheek, and are consequently out of the way and do not interfere with the manipulations of the operator. The lid-plates are attached at a slight angle to prevent the lids from slipping off. The instrument is made in pairs,—a right and a left—one for each eye.

This instrument combines ease of application, proper exposure of the field of operation, and safety from squeezing by the lids. With the tonometer we have repeatedly demonstrated that the intra-ocular tension will not be raised in the least by the most forcible squeezing the patient is able to exert when the instrument is properly held. The lids are at all times entirely under the control of the assistant and the patient is absolutely powerless to cause harm by squeezing. It is introduced at the beginning of the operation and not removed until the toilet is completed and the eye ready to be bandaged.



Green's New Eye Speculum.

It is applicable to every form of intra-ocular operation, particularly the extraction of cataract. In the Smith-Indian cataract operation we are using it to exclusion of hooks or lid elevators, and with absolute confidence that no vitreous will be lost which we cannot foresee. In fact, we now lose less vitreous than we did when in India, where even under the watchful guidance of Colonel Smith, ably assisted by Nur Ilahi, vitreous was occasionally lost when making the section.

In using this speculum the assistant stands to the right of and facing the patient for operations on either eye. The instrument is held in the left hand when operating on the right eye, and in the right hand when operating on the left eye. The upper blade of the closed speculum is first introduced under the upper lid, which is drawn up with the thumb; the lower lid is then drawn down with the forefinger and the lower blade introduced beneath it. The speculum is then opened sufficiently to give a good exposure of the field, care being exercised not to stretch the lids so far apart as to cause discomfort to the patient.

The lids are cleared from the eye-ball by raising the instrument away from the globe; the hand holding the speculum should be pressed firmly against the cheek to help to steady it, and thus maintained throughout the operation.

When operating on the right eye the right thumb draws up the brow, the left thumb doing the same for the left eye. This is simply an added precaution against the patient squeezing. From the time the instrument in inserted until it is finally removed the assistant must be on the alert to prevent the lids from touching the eye-ball. Pains should be taken to remove the instrument gently at the completion of the operation, the lower lid being first carefully freed, then the upper, and the patient directed to close the eyes gently as though going to sleep.

A CASE OF RETINAL DETACHMENT.

Report of a New Operative Procedure.

BY

THOMAS HAYES CURTIN, M. D.,
NEW YORK CITY.

As Roemer says, "The treatment of detachment of the retina is one of the most thankless and unsatisfactory duties we have to perform in ophthalmology." From my personal experience I heartily agree with this statement, and for that reason I wish to put the following case on record in ophthalmological literature, for it is the first case of retinal detachment in my experience where even a temporary success has been attained.

The patient, J. B. B., called at my office on the evening of October 1 and I found the following conditions: Family and personal history negative. He is twenty-one years old, employed as a bookkeeper. There was no history of any trauma whatever; Wassermann and Von Pirquet reactions negative; urine test negative, and blood pressure 128 mm.

Vision: O. D. 20/40.

O. S. Vision was limited to hand movements in lower and outer fields.

Pupils react normally. Tension of left eye, by finger palpations, seems slightly lower than the tension of the right eye.

An ophthalmoscopic examination of the left eye showed a large detachment of the lower and outer part of the retina. The retina was bluish-white and thrown into folds, with loss of light reflex of the vessels. This area extended well up near the macular region, but the disc was still visible. Outside of a few floating vitreous opacities, the fundus was otherwise normal. He was sent to the Manhattan Eye, Ear and Throat Hospital, which he entered the following day, October 2, 1914, and was given the usual non-operative treatment for detached retina, consisting of the recumbent position, the instillation of 1/2 per cent atropin twice daily, with a mild pressure bandage over the affected eye. Pilocarpin sweats every other day. This treatment was continued, he being kept in bed upon his back until October 12. No improvement was apparent, either subjectively or objectively.

After consultation with Dr. Edgar S. Thomson, he was taken to the operating room and a scleral button 2 mm. in diameter was removed from under a conjunctival flap over the site of the detachment and as far back as possible between the inferior and external rectus muscles by the screwdriver trephine. The choroid and the retina were not punctured at this time and the conjunctival flap was united by two sutures of silk and a moderate pressure bandage reapplied, and the patient returned to bed and atropin drops still continued.

He remained in the recumbent position until October 22. The eye showed a moderate amount of reaction and by October 22 it was fairly white, but the ophthalmoscopic picture remained the same, showing the retina still detached in the lower and outer part of the fundus and no improvement in the vision.

He was again taken to the operating room, a medium-sized aspirating syringe was pushed through the conjunctiva and the scleral opening made by the trephine, and 25 minims of clear white fluid was aspirated. This was subsequently found to resemble serous fluids in general. The fundus of the eye was immediately examined and the retina was seen to have fallen back into place. The patient was returned and kept there until November 4. There was no reaction to the eye following this aspiration; the eye did not even get red.

The vision of this eye has improved from hand movements in the lower and outer fields, progressively to 20/30 with a minus cylinder, axis 180 correction. Externally the eye shows a localized chemosis around the scleral opening. The fields of both eyes are equal and normal for both light, color and form.

Ophthalmoscopically the retina shows whitish-yellow striations in the lower and outer part, extending up through the macular region. There are some small floating opacities in the vitreous and back of the lens is a triangular grayish-white opacity which appears to be in the hyaloid membrane.

The patient during his illness complained of photopsia, metamorphopsia and also described a purplish ring that he would see at times in the central portion of his vision. These subjective symptoms have entirely disappeared. There is an edema of the retina at the site of the scleral trephining. He reports every second day, when the fundus is examined and the vision taken.

The vision on November 16th, with correction, equaled 20/40 minus. November 23rd was 20/70 plus and on November 29th was 20/40. On December 8th was 20/30. Tension normal in both eyes.

On each visit the conjunctiva over the scleral opening shows a slight chemosis and the eyeball has been gently massaged by the thumb with the lower lid interposed in order to keep the scleral opening patent and to facilitate the drainage between the subretinal and choroidal space and the subconjunctival tissues.

This operation follows the lines reported by Walter R. Parker of Detroit, Michigan, before the American Ophthalmological Society at its fiftieth annual meeting in 1914 at Hot Springs, Va. In his case he also trephined the sclera, but instead of aspirating, as above mentioned, he "incised the choroid and retina with a cataract knife and a gush of straw-colored fluid was followed by a small amount of vitreous."

The reaction in his case was most severe and the eye showed a swelling and chemosis for ten days. The fundus examination was made three weeks after the operation, when he found a complete reattachment of his retina with opacities in the vitreous, with silver wire characteristics in the macular region. Parker's operation was all done at one sitting, which was followed by, from his own report, a very severe reaction to the eye, while the operation in this case was done in two stages, first the conjunctival flap with the removal of the scleral button, the flap being readjusted and allowing the eye to become white before proceeding with the second stage of the operation, namely, the aspirating of the subretinal fluid, which can be done again without any further injury or cutting to the ocular tissues by inserting a medium-sized aspirating needle through the conjunctiva and the scleral opening, which can be readily seen as a small, dark, round opening in contradistinction to the white sclera. If deemed desirable, the conjunctiva can be raised and shifted so that on the withdrawal of syringe the opening in the conjunctiva will not be in apposition to the scleral trephine opening. The syringe was in this case first directed upward, but after its entrance within the sclera the direction was made backwards in order to avoid puncturing the retina. The fluid was slowly aspirated with a gradual withdrawal of the needle.

By the aid of the electric ophthalmoscope it is possible for an assistant to watch the process of aspiration in the interior of the eye. This, however, was not done in this case, but the fundus was examined immediately after.

The advantages of this aspirating operation over Parker's method is (1) the small amount of traumatism produced in the ocular tissues, the operation being done in two stages; (2) no injury to the retina and no loss of vitreous; (3) no marked reaction; (4) the examination of the fundus during and immediately following the operation; and, lastly, which is the most important, with the re-collection of fluid underneath the retina by this method of aspiration it can be readily and easily removed without any further operative procedures.

The success of scleral trephining with puncture through the choroid seems to be due to the continuous drainage which seems to exist between the choroidal spaces and the subretinal tissues interiorly and the subconjunctival tissues exteriorly, and this should be facilitated and kept patent by the use of massage of the sclera around the opening.

This patient returned to business on November 23, 1914, but changed his occupation to that of salesman, which has necessitated his traveling on street, elevated and subway cars. His eye has not been "nursed," so that this case, although of short duration, appears as if the re-attachment will hold, and I hope at a later time to report this case with a series of others successfully operated under the same procedure.

CONSERVATIVE TREATMENT OF PENETRATING WOUNDS OF THE EYEBALL.*

BY

ALBERT E. BULSON, JR., M. D.

FORT WAYNE, INDIANA.

PROFESSOR OF OPHTHALMOLOGY, INDIANA UNIVERSITY SCHOOL OF MEDICINE.

Penetrating wounds of the eyeball very properly are considered serious conditions and often offer an unfavorable prognosis as to preservation of useful vision or even the eyeball.

The nature, location and extent of an injury must be taken into consideration before deciding upon the treatment to be employed, but while it always is well to err on the side of safety by enucleating the injured eye, there is a wide margin of latitude in a large number of cases that may be considered before the surgeon decides upon radical measures. In some penetrating wounds the probable fate of the eyeball can be foretold at the first examination. This is particularly true of those cases in which the injury involves a considerable portion of the ciliary region or there has been such extensive loss of or prolapse of intraocular contents as to preclude the possibility of saving either eyeball or sight without running the very serious risk of having involvement of the fellow eye.

Not a few cases may tax the judgment of even the most experienced operator, and yet if we remember that sympathetic inflammation rarely has been known to develop earlier than three weeks from the time that the exciting eye was injured we with all propriety may postpone enucleation for ten days to two weeks in the uncertain cases, during which time the fate of the eyeball probably will be determined. That such a policy is attended with the preservation of eyeball and not infrequently a fair amount of useful vision is attested by numerous cases managed by conservative and experienced ophthalmic surgeons. The possibility of the development of serious complications always should be kept in mind, and for that reason penetrating injury cases should receive careful and unremitting attention of the surgeon to guard against the development of those manifestations which unerringly point to disaster.

---

*Read before the Chicago Ophthalmological Society, October 19, 1914.

It has been my experience to see and care for a large number of eye injuries, and in looking backward it seems as though punctured eyeballs in sufficient quantity to fill a quart measure have been removed because conscientious judgment in each case seemed to indicate that preservation of eyeball without serious danger to the fellow eye was an impossibility. With increasing experience it seems to me that some of the eyeballs that were sacrificed might have been saved. Yet in making this assertion I am not unmindful of several serious as well as pathetic results, due to mistaken judgment in following conservative treatment, or to failure on the part of the patient to accept proper treatment, that have come to my attention. A brief report of three such cases is not without value in elucidating the subject and adding to the clinical program of which this paper is a part.

Case 1. B.D., male, age 17, was brought to me by the family physician 18 hours after an injury caused by being struck in the eye with a broken lamp chimney thrown by an associate. An irregular cut of about 6 m.m. in length extended through the cornea and into the lens and ciliary region, through which there protruded a bead of vitreous and a small prolapse of iris. As the patient could count fingers the father rejected the advice to have the eyeball enucleated, and consulted another physician near his home town, who abscised the prolapsed iris and placed the patient under treatment. At the end of three weeks the patient was dismissed and entrusted with home treatment, notwithstanding that the injured eyeball (according to the report that came to me later) was injected and tender, and the good eye was affected with sympathetic irritation. Three months later a Toledo ophthalmic surgeon promptly enucleated the exciting eye, but without preventing almost total blindness of the sympathizing eye.

Case 2. F.H., male, age 21, was referred to me by the family physician with the statement that he thought the patient had sympathetic inflammation as a result of a punctured wound of the fellow eye received five weeks previously. The patient had neglected to report to the family physician subsequent to attention for a perforating eye injury. The exciting eye presented a small healed wound at the limbus, but a distorted pupil and other evidences indicated that a portion of the iris was entangled in the wound. Eyeball injected and extremely sensitive to touch. Pupillary area cloudy and vision nil. The fellow or sympathizing eye presented all the symptoms of a sympathetic inflammation the onset of which dated one week previously. Vision reduced to 20/50? and eyeball very sensitive to touch and light.

The exciting eye was enucleated at once, but despite heroic doses of sodium salicylate, pilocarpine sweats, atropine crowded to the physiological limit, and the employment of mercury and several other measures of recognized merit, the patient lost useful vision and today is practically blind.

Case 3. Mrs. L., age 37, referred to me by the family physician with a history of having lost the vision in the right eye eight years previously, but no discomfort in the eye until two months prior to seeing me when severe pain and tenderness developed. A very competent ophthalmic surgeon performed an iridectomy which gave temporary relief but which soon was followed by the development of a cataract which was extracted in the usual way. Subsequently the eye was comfortable, though it continued to be injected and very sensitive to touch. Three weeks after the cataract extraction the left or good eye became congested, extremely sensitive to light, tender to touch, and the vision failed rapidly. A week later the exciting or blind eye was removed.

When the case was brought to me the only remaining eye was practically blind, (vision equalling hand movements at 12 inches) from the effects of a typical case of sympathetic inflammation that had existed for over three weeks. Despite the apparent hopelessness of the case, heroic treatment was instituted and kept up for several weeks but without accomplishing any results in the way of improving vision. Later reports indicate that the patient is practically blind.

It should be noted that in all these cases the exciting eye showed no marked signs of improvement subsequent to the injury but presented evidences of uveal disturbance which increased in severity. Under such circumstances it would seem that without favorable progress during the first seven to ten days subsequent to the injury, early enucleation was indicated.

There is a happy mean between conservatism and radicalism when it comes to a decision as to what treatment serves the patient's interests best in penetrating injuries of the eyeball. That many injured eyeballs are slaughtered ruthlessly because the surgeon desires to be on the safe side, cannot be doubted, but while every ophthalmic surgeon should have a wholesome fear of sympathetic inflammation it is his duty to consider carefully all the possibilities for both good and harm and to adopt any measures that offer hope of saving either vision or eyeball without incurring undue risk. Taking into consideration those extremely rare cases where sympathetic inflammation has occurred after a prompt enucleation of a violently infected eyeball, thus indicating the rapidity with which the sympathetic process may develop, I still maintain that in a large proportion of penetrating wounds of the eyeball, even in the ciliary region, we are justified in making an attempt to save the eye, not forgetting that such an eye requires critical observation and with the decision that the condition is growing worse instead of better, enucleation should be performed at once. I am strongly of the belief that mercury and sodium salicylate given internally and carried to the physiological limits, and the subconjunctival injection of a solution of cyanide of mercury, greatly aid in the prevention of sympathetic inflammation. Hexamethylenamin also may be employed with possible benefit.

As examples of cases that at the time of injury might have been considered appropriate for enucleation, the following are cited:

Case 4. F.L., male, age 17. Brought by family physician for enucleation. Gave history of being struck in the right eye with a ten penny nail flying from the hammer of a fellow workman. The nail penetrated the eyeball and was pulled out by the patient. Patient was seen by me two hours after the injury. The eye presented an irregular wound about 3 m.m. in length extending backward from a point about 2 m.m. from the sclerocorneal junction. A small bead of vitreous and a button of iris presented. Anterior chamber was full of blood. Vision nil.

The button of iris was very carefully crowded forward with a sterile spatula, the edges of the scleral wound touched with tincture of iodine, and the conjunctiva slid over the wound and stitched. Patient put to bed and given 90 grains of sodium salicylate per day. An uneventful recovery resulted, and with correcting lenses vision of 20/20 was regained. At no time was there any marked injection or tenderness of the eyeball, and the favorable result has continued now for considerably over a year.

Case 5. C.V., male, age 17, referred by family physician with history of having received, three hours previously, an injury to the left eye from the explosion of a loaded cartridge which he was extracting from a shotgun. Patient stated that he had removed a piece of cartridge from the eye. Examination disclosed an ugly penetrating wound of the eyeball extending from near the center of the cornea to a point fully 4 mm. back of the limbus. Near the limbus there appeared to be a small bridge of tissue which prevented the wound from gaping. Posterior to this the vitreous presented. There was no prolapse of iris. In addition to the wound the eyeball and eyelids were peppered freely with powder grains. Anterior chamber filled with blood. Vision nil.

Enucleation was advised but at the urgent request of the father of the boy consent was given to a delay of a few days to see if the eyeball could be saved, providing X-ray pictures showed no foreign body in the eye. The edges of the wound were touched with a 1-3000 bichloride solution, the conjunctiva slid over the scleral wound and stitched, the eye dressed with bichloride salve, and the patient put to bed. Sodium salicylate and hexamethylenamin in large doses prescribed. Several X-ray plates taken the following day were negative. Reaction slight and the wound healed kindly. At the end of a week there was no tenderness to pressure and but a passive congestion. At the end of two weeks the patient had vision of 20/200 and a mobile though slightly distorted pupil. Vitreous cloudy. Four weeks after the injury there was not the slightest evidence of irritation of any kind, and at this writing, a year from the injury, the patient has 20/70 vision, and though the vitreous presents some cloudiness. and the pupil is slightly irregular, the tension is fairly normal and there is no sensitiveness of any kind whatsoever.

Case 6. C. S., age 4 years, brought by the father with a history that the child had run the blunt point of a pair of scissors in the left eye. Examination showed a ragged wound 4 or 5 mm. in length directly through the limbus, through which the iris, ciliary body and vitreous presented. At the urgent request of the father I agreed to make an effort to save the eyeball and under general anesthesia the prolapsed iris and a bead of vitreous were abscised and the wound closed with one stitch through the sclera only and two or three stitches through the conjunctiva which was drawn over the wound. The child was given small doses of bichloride of mercury for a period of 4 or 5 days. Recovery was uneventful and except for the first 3 or 4 days the child complained of no tenderness upon pressure and there was little congestion. It is now 16 years since the injury, and a few weeks ago, when the patient came in for a change of glasses, the vision in the defective eye was 20/70 with correcting lens.

In the management of these cases of penetrating wounds of the eyeball, several things are worthy of consideration. If there has been considerable loss of vitreous in connection with injury of the ciliary region, enucleation or one of its substitutes is indicated. The same is true of *extensive* injuries of the ciliary body, iris and lens. Injuries to eyes that are already the seat of a pathological condition also are more likely to require immediate removal. Injuries accompanied by the retention of a foreign body in the eyeball form a group of cases that should be managed according to well established rules.

Of no little importance in the conduct of cases of penetrating wounds of the eyeball in which an endeavor is made to preserve the eye is the necessity of coapting the wound edges as nearly as possible, and preventing the incarceration of iris or ciliary body. While iris entanglements in a wound many times have been known to exist during the lifetime of a patient without producing serious results, yet such a condition is recognized as a possible source of danger, if nothing more than in the causation of a sympathetic irritation.

Scleral stitches are not only difficult to place in the edges of a punctured wound but are unnecessary if the conjunctiva is slid over the wound and carefully stitched. Furthermore, the conjunctival flap has a tendency to prevent secondary infections which are a prolific cause of mischief in trauma cases. I am a firm believer in the efficacy of tincture of iodine or 25 per cent solution of trichloracetic acid touched to the wound edges to counteract infection, and unless iodine has been used I dress with bichloride ointment all of my operative cases. Some of my supposedly seriously infected cases have been subjected to subconjunctival injections of solutions of cyanide of mercury, and cauterization of the wound edges with 50 per cent solution of trichloracetic acid, and in one or two instances the results have been favorable in what looked like hopeless cases.

The patient should be put to bed and kept there for a week. A calomel cathartic, followed by large doses of sodium salicylate seem to act beneficially in preventing inflammation. Hexamethylenamin in large doses is also of possible benefit, though its possible irritating effect upon the urinary tract must be taken into consideration. The development of pain, tenderness, and increased congestion is an indication that progress is not satisfactory, and if those, or any one of those symptoms persist, the eyeball should be enucleated. Generally the fate of the eyeball according to these rules will be known within ten days or two weeks following the injury. No chances should be taken in an uveal inflammation of traumatic origin.

219 West Wayne Street.

THE OPERATIVE TREATMENT OF ACUTE GLAUCOMA.*

BY

G. HERBERT BURNHAM, M. D., F. R. C. S.
EDINBURGH.
PROFESSOR OPHTHALMOLGY, UNIVERSITY OF TORONTO; CHIEF OF THE EYE DEPARTMENT, ST. MICHAEL'S HOSPITAL, ETC., TORONTO.

This patient's case, a woman aged 53 years, is brought to your notice, as it is a typical form of acute glaucoma. Being an old patient of mine, the previous condition of the eyes was known to me, and was normal, save hyperopic astigmatism and presbyopia, which were corrected. Previous to this visit, I had not seen her for three years or more. The attack of acute glaucoma of the left eye came on suddenly during the night with severe pain.

As I was out of town when she first came to consult me, she went to another oculist. He ordered eserine and sent her back to me. The condition of the eye was brawny, swollen lids; conjunctiva a deep red, swollen and flesh-like; cornea steamy, very shallow a. c.: p. ¾ dilated though eserine was being used; just p. l. in the extreme outer field. An operation was urgent. It was a case in which to do an iridectomy either with a keratome or Graefe knife would be difficult, and one in which the trephine operation seemed to be the best procedure. This I arranged to do.

---

*Read before the Section of Ophthalmology and Oto-Laryngology, Academy of Medicine, Toronto, November 9th, 1914.

However, instead of making the opening by using the trephine after the manner of Elliot, I felt it was a case in which the Bardsley sclerectome would be more satisfactory.

I incised the conjunctiva and turned it down over the cornea and split the layers of the cornea, as is usually done. The conjunctiva, though it did not bleed, as I used epirenin and cocaine, remained red, swollen and stiff. This condition would have rendered the manipulation of the trephine, after the Elliot method, troublesome. I now passed the keratome-blade of the instrument through the sclera. It came out into the a. c. in front of the iris and could be plainly seen. Then I pressed down the spring that operates the punch and made *instantaneously* the trephine opening at the sclero-corneal junction.

The aqueous flowed out and swept the round piece, cut out by the trephine, on the eyeball. The opening was sharply and clearly defined. Beneath was seen the iris-tissue, lying quite flat and showing no tendency to bulge.

As in those cases an iridectomy is advised to be done, I performed one, entering through the opening made by the keratome, not through that made by the trephine. The iridectomy was satisfactory, a good coloboma being made, and the iris-tissue fell back into its proper place in the a. c. Then a stitch united the conjunctiva, as it was so swollen and stiff. The result was satisfactory. The present vision is two letters of 6/12, tension and a. c. normal, O. D. not cupped.

My own feeling is that the Bardsley sclerectome enables one easily, quickly and accurately to make the trephine opening. Also, it reduces to a minimum any pressure upon the eyeball in making the trephine opening. This in various forms of glaucoma is a valuable consideration on account of the tendency to displacement of some of the structures of the eye. It also lessens the likelihood of infection later on.

It is generally advised to do an iridectomy, which in

Elliot's operation has to be made through the trephine opening. It is also said that the ragged edges of the iris adhere more or less to the margins of the aperture, which is beneficial, as it aids in keeping the aperture permeable.

This view is strongly condemned by Elliot, and rightly so; for it seems to be an improper surgical practice to have the iris-tissue thus kept close to the conjunctiva and hence liable to infection later on, if an abrasion or weakening of the conjunctiva occurs. Whereas the use of Bardsley's sclerectome enables the iridectomy to be made through the keratome incision, and thus there is not the same tendency to the adhesion of the iris to the edge of the trephine opening, as when made through the latter. The trephine opening, being so clean-cut also lessens the danger of entanglement of the iris. Hence the likelihood of subsequent infection is minimized, one may assuredly say.

Mr. Bardsley's sclerectome seems to be a very ingeniously contrived instrument, and one that enables the trephine opening to be done quickly and satisfactorily; and also to avoid the likelihood of the small, round piece that is excised, getting into the a. c., an awkward complication. Also, it lessens the danger of interfering with the vitreous chamber. Also, the size of the trephine is 1.50 mm. which for the following reasons, as given by Mr. E. Treacher Collins is the best.

"I have found experimentally," he says, "that the line of junction between clear cornea and opaque sclerotic is 1 mm. internal to the position where Descemet's membrane commences to split up into the fibres of the ligamentum pectinatum. If, therefore, a 1.50 mm. trephine is used and the center of it is placed over the margin of the cornea on the surface of the globe, a complete disc of Descemet's membrane will be found on the posterior surface of the piece excised." "This," he goes on to say, "is important, for the first essential factor in the formation of a permanent filtration scar is to establish a permanent gap in the endothelium lining Descemet's membrane."

Adding to these, the other advantages mentioned previously, I think that the use of this instrument helps to place this very skilfully conceived and thought out operation of Col. Elliot on a more reliable basis, and weakens the force of many of the objections urged by some oculists.

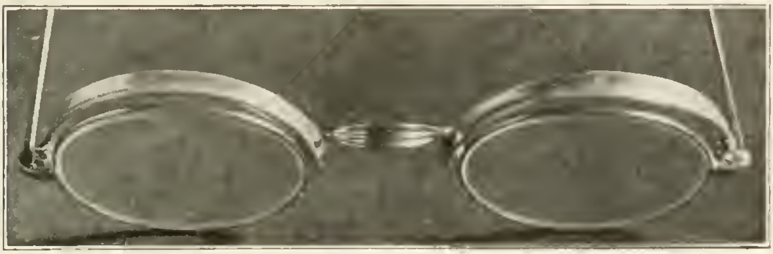
A SPECTACLE FRAME FOR TENNIS PLAYERS AND FARMERS.

BY

H. GIFFORD, M. D.

OMAHA, NEBR.

Having been much annoyed while playing tennis or doing any hard work in hot weather by sweat running down from my eye brows upon my glasses, I have had a pair of gutters made in aluminum which screw on to the sides of the bridge and the outside posts, which prevent this trouble. The inner edge of the gutter fits close under the eye brows and carries any excessive perspiration off to the sides. I think the frame may find a larger application among farmers than among tennis players, as any one who has attempted to pitch hay or do other hard work in the hot sun, will readily appreciate. Many a farmer who ought to wear glasses either for visual purposes or to protect his only remaining eye, will not do so on account of the dimming of the glasses in hot weather. The frames are made by the Omaha Optical Company, Brandeis Block, Omaha, Nebr.



Spectacle Frame for Tennis Players and Farmers.

* * *

According to the *Ophthalmoscope,* the antarctic expedition of Sir Ernest Shackleton has been fitted out with goggles for protection against snow, which are shaped like the gauze eye cup, being made of aluminum-nickel alloy, with an adjustable leather bridge and straps to go behind the head. The lenses are Euphos of the shade known commercially as No. 4. One myopic member of the party has his correction ground in clear glass behind the Euphos lens, thus securing the same tint in all parts of the glass as would be impossible if the correction were ground in the colored glass.

REPORTS OF SOCIETIES

ST. LOUIS MEDICAL SOCIETY, OPHTHALMIC SECTION.

May 6, 1914
(Continued)

I was convinced at the time that the cause of the trouble was the prolapse of fat. Evidently, I had cut into orbital fat with the scissors, so that it protruded, and the effect was accentuated by the hemorrhage that occurred.

I saw in the general literature an instance where a physician was confronted with a hemorrhage and was unable to stop it and he conceived the idea of cutting his own finger and letting the blood drop on the bleeding area, in that way controlling the hemorrhage.

Dr. John Green: Some laryngologists, prior to operation on tonsils, are at pains to determine the coagulation time of the blood. They operate in an area in which hemorrhage is with difficulty controlled and hence try to guard against this complication. Might we not, prior to enucleation, with advantage copy this procedure?

Removal of an Anteriorly Dislocated Lens with an Ewing Keratome. By John Green, Jr., M. D.

Removal of a lens dislocated into the anterior chamber is an operation which the surgeon is apt to approach with some misgivings. Invariably, the zonule is ruptured in whole or in part, and, hence, once the globe is opened there is no barrier to the tendency of the vitreous to press forward. If the attempt be made to extract the lens in the ordinary fashion, that is, by pressure on the cornea following an upward section, one is likely to lose vitreous even before the lens presents. Following this accident, there is a tendency for the lens to drop back, or if this does not occur, its delivery can only be effected by means of a hook or loop, thereby inviting a further spilling of vitreous. Beard advocates dispensing with the speculum, fixing the globe by grasping the tendon of the superior rectus (Angelucci fixation) making an upward section, and then extracting with a hook-passed behind the lens and "dug" into it. In this manner he succeeded in extracting a large, slightly luxated Morganian cataract without loss of vitreous. The grip on the superior rectus served to hold back the upper lid, absolutely prevented upward rolling of the globe and caused strong tendency to closing of the wound. Fixation of the lens, by means of a Bowman's needle passed into or behind it, preliminary to making the upward section, has many supporters.

Cellen advocates a Lebrun section, depressing the handle of the knife so that the blade passes through the soft cortex in front of the nucleus, then elevating the handle and completing the section. Loop or spoon extraction.

Beard states that "Beer, in Vienna, at the close of the 16th century, tried plunging the lance-knife, with which he made the corneal incision, into the lens, mobilizing the latter, completing the section, then expelling the lens by pressure. Often, however, the cataract came out with the knife."

Dr. A. E. Ewing suggested the use of the broad keratome, (which he has used so successfully in cataract work), as an efficient instrument in handling this type of case. In Dr. Ewing's patient, a congenital ectopic lens had become wedged in the outer part of the anterior chamber, accompanied by increased tension and pain. Steadying the globe with double fixation forceps, a keratome incision was made in the temporal sclero-corneal margin and the blade passed back of the lens. The fixation forceps being exchanged for a Daviel spoon, pressure was made backward on the nasal portion of the cornea as the knife was slowly withdrawn. A hard, black nucleus came out with the receding knife, followed by a moderate gush of aqueous and bloody vitreous. Recovery, with vision 20/120, the same as previous to the glaucomatous attack.

My case is that of J. A., aged 62, first seen March 16, 1914. Three and one-half weeks before coming under observation, the left eye and eyebrow were hit by a fragment of wood struck off by a hatchet. The patient was at first under the care of a general practitioner who used cocain and atropin. A greatly swollen, cataractous lens almost completely filled the anterior chamber. A narrow ring of iris was to be seen wedged between the lens periphery and the back of the cornea. At the upper, outer part of the chamber, the plane of the iris appeared to be slightly posterior to that of Descemet's membrane. By focal illumination, it was possible to make out the outline of a fair-sized nucleus. Tonometer: R. 18 mm. Hg. L.25 mm. Hg. R. V. 6/12, + 1.25 C. 6/5. L. V. fingers at 6 in. In conference with Dr. Ewing, who kindly saw the patient with me, it was decided to pass the keratome into the lens behind the nucleus and by pressure on the cornea below endeavor to slide the lens out on the surface of the receding keratome blade. Operation at the hospital, Dr. Hardy assisting. The double fixation forceps handled by the assistant grasped the conjunctiva on either side of the cornea, the operator holding a Daviel spoon in the left hand and Ewing's keratome in the right. The incision was made at the upper sclero-corneal margin, the point being directly backward so as to pass posterior to the nucleus. The keratome was advanced until the rounded heel coincided with the sclero-corneal junction. As soon as this was accomplished, pressure was made on the lower part of the cornea and the keratome very slowly withdrawn. A good deal of soft cortex immediately presented. When the keratome was about half way out, a small nucleus appeared, followed by more cortex. The iris prolapsed, but almost immediately receded. Pupil nearly round and black. No loss of vitreous. One month after operation, the iris had become adherent throughout its entire extent to the back of the cornea and the nasal fibres appeared to be atrophic. Anterior capsule remains were attached to the posterior surface of the cornea. The deeper layers of the cornea contained here and there fine spots of infiltration. Right tension of 18 mm. Hg. Left tension 8 mm. Hg. Left vision + 10, 1/40. Ophthalmoscopically, faint view of the disc through the membraneous opacity. I presume that prolonged contact of cornea and iris through the forward pressure of the lens led to inflammatory adhesion, and that the capsule became attached to Descemet's mebrane through a similar process.

My experience in this single case leads me to believe that Dr. Ewing has suggested a valuable procedure. The operation is not difficult; it is simply a question of passing your keratome blade back of the nucleus to furnish a support for the lens. The keratome is slowly withdrawn and at the same time pressure is made on the lower part of the cornea; in all likelihood the nucleus will come out with the receding blade. The keratome blade does act as a distinct barrier to the advance of the vitreous, whereas all the other methods that have been suggested do not at all effectively hold back the vitreous. I am very sorry that Dr. Ewing is not here tonight. I should like to hear what his views are on the subject.

DISCUSSION.

Dr. W. F. Hardy: I remember that I saw for Dr. Charles last summer a girl with congenital dislocated lenses. One lens was dislocated in the anterior chamber, but she did not want any operative procedure done. The pupil was dilated with homatropine. She was put in a reclining position, and the lens dropped back through the pupil. The pupil was then contracted with eserin. That is the last I have heard of her. I suppose she is all right. I have had no operative experience with these cases.

Removal of Globe After Sclero-Corneal Trephining. Clinical Report and Microscopical Findings. By John Green, Jr., M. D., and Wm. F. Hardy, M. D.

Clinical Report: Mrs. M. L. L., age 59, came under observation Jan. 20, 1911. Ocular History: Smoky vision of the left eye was first observed five years ago. Sight in this eye gradually failed to blindness accompanied by an occasional heavy ache, but no true pain. In the right eye vision had been misty for several months. Right vision +2.+.5c. ax 45, 5/8. Left vision faint p. l. Ophthalmoscopically, both discs showed typical glaucomatous cups, the right 3 D., the left 6 D. in depth. T.+ both. The right field was markedly contracted nasally, especially in the horizontal meridian. The patient was carried along from Jan. 20, 1911, to July 2, 1913, with no diminution in central vision and only moderate further contraction of the field. Treatment consisted of eserin salicylate, pilocarpin muriate, and a carefully regulated regime. In July, 1913, patient went to Los Angeles and was not seen again until Jan. 16, 1914. On her own initiative, she had abandoned local treatment since August. Right: + 1 vision 6/10. Left blind. Several weeks ago, the left eye began to be painful and presented all the signs of a subacute attack of glaucoma. R. T. 36 mm.. Left tension 72 mm. Hg., Bl. pr. 195 mm. Hg. Urinalysis showed sugar. On Jan. 20th, left eye was trephined according to Elliot's method. The usual conjunctival flap was laid down over the cornea, which was split with some difficulty. 2mm. trephine, which proved to be rather dull, finally cut through the sclero-cornea, the division of the deeper layers being accomplished with some difficulty. There was no immediate prolapse of the iris, but on lifting up the plaque with forceps a small peripheral prolapse took place. This was excised, and an attempt was made to wash the iris into position with the irrigator. Almost immediately after the peripheral iridectomy, there was an appearance of blood in the anterior chamber. It was therefore impossible to determine whether the irrigation had washed the iris back into position. The conjunctival flap was replaced, and one suture inserted near the apex. After the operation the eyeball felt very hard; in fact, if anything, tension was higher than before, so that I immediately suspected not only a hemorrhage from the iris, but a deep one as well. The patient experienced a great deal of pain for the first four or five days. The blood in the anterior chamber slowly resorbed, revealing the fact that the iris was adherent at several points to the anterior capsule of the lens. I hesitated to use a mydriatic in view of the increased tension, but did so, nevertheless, feeling that I must endeavor to rupture the synechiæ if possible. The patient made a very tedious recovery, and when she left the hospital a month later, the eye was still very red and irritable. It was then observed that the lens was becoming opaque. In the meantime, tension, which at first was decidedly high, had gradually dropped to normal, but there did not appear to be any filtration through the sclero-corneal opening. On March 10th, I noticed a slight hypopyon, which on the following day had increased to one-fourth the height of the chamber. No evidence of infection at site of trephining. The condition went from bad to worse ,and on the 13th chemosis and increased pain indicated an impending panophthalmitis. Removal of the globe was therefore advised and performed the same afternoon.

I cannot blame myself with any special clumsiness in the performance of the trephining, although, no doubt, the technique would have been smoother had the trephine been sharper. It is possible that, as indicated by the specimen, the trephine blade came into contact with the lens periphery, thereby leading to the development of a traumatic cataract.

Microscopical Findings: The bisected eye macroscopically showed a cataractous lens displaced upwards, impinging on the trephined area. The iris was pressed against the cornea, no anterior chamber being present. The iris tissue prolapsed into the trephine opening was attenuated. The vitreous was filled with a grumous mass, the anterior part showing a purulent character, the posterior bloody. There had evidently been a large, deep, intraocular hemorrhage. Microscopically, the prolapsed iris was represented chiefly by its pigment layer, the stroma having atrophied. The capsule of the lens was ruptured at its superior aspect and the corresponding part of the lens substance was infiltrated with round cells. Other portions of the lens showed areas of round cell infiltration, lying in layers between the lens substance. The hiatus in the lens capsule must have been brought about by the trephine. The trephine opening was filled with connective tissue, round cell exudate, blood, iris pigment and epithelium, the latter a downgrowth from the bulbar conjunctiva. In some sections, the epithelium appeared as a teatlike prolongation, in others as islands or plugs of solid epithelium. Anterior and posterior to the iris tissue outside the operative area were small collections of red blood corpuscles. Between the anterior lens capsule and the iris, the space was filled with an aggregation of round cells. In some areas, the pigment layer of the iris was separated from the stroma by hemorrhage. The ciliary body in the region of the trephine opening was densely packed with leucocytes. Good sections of the optic nerve were not obtained; those we had showed the optic nerve cup filled with exudate. The lens capsule where ruptured was thrown into folds, the free ends reaching up to the opening in the sclero-cornea. The abrupt ending of the lens capsule, Descemet's and Bowman's membrane were apparent; the appearance of the cornea and Bowman's membrane gave one the impression that the splitting of the cornea was not deep nor extensive. The microphotograph made by Dr. Alt shows very clearly the pathological conditions.

DISCUSSION.

Dr. John Green: Dr. Woodruff, I would like to hear from you in regard to a case that I saw you do at the Deaconess Hospital, about the middle of November. What was the final outcome?

Dr. Woodruff: The same that you report. I cannot give you the details, because I do not remember them exactly, but this woman had no light perception at all. She was suffering with pain at the time that she came to me, and the only reason for doing the operation at all was the hope of relieving her pain. She was distinctly told that there was no possibility of recovering any lost sight. The trephining was done with a two-millimeter trephine, and everything went along smoothly for four or five days. Suddenly, she developed great pain and tenderness, increasing tension, indicative of an intraocular hemorrhage. The pain became so intense that I removed the globe, and found an intraocular hemorrhage. I will say that she had a glaucoma in the other eye. I had not seen her for some time until a about a week ago, when she came in. This was done about the last of October, and she did not consult me until a few days ago when she came to me on account of some other trouble.

ST. LOUIS MEDICAL SOCIETY, OPHTHALMIC SECTION.

October 7, 1914.

Demonstration of the Gullstrand Ophthalmoscope by Dr. W. H. Luedde.

Parenchymatous Keratitis in Acquired Lues.

Dr. William F. Hardy presented a case of parenchymatous keratitis the result of acquired lues. The current ophthalmological literature is conspicuous by reason of the paucity of such reports.

There must still exist a doubt in the minds of some as to the occurrence of parenchymatous keratitis, the result of acquired lues, for Carpenter takes pains to make the following statement: "That the cornea may be involved in acquired syphilis can no longer be denied, inasmuch as at least 100 well-authenticated cases have been recorded in which, as a late secondary or tertiary symptom, diffuse interstitial keratitis appeared in patients suffering from syphilitic infection." Carpenter made this statement in 1908. Since then a number of other cases have been recorded. Mohr recorded a series of cases of parenchymatous keratitis, four of which occurred in women, and in these luetic manifestation datéd since marriage, so that parenchymatous keratitis, he states, may occur as a result of acquired lues after seven to fourteen years. Both Carpenter and Davis have called attention to the paucity of reports in American literature.

The incidence of the disease is stated by different writers to be from one-half to three per cent of all cases of parenchymatous keratitis. Carpenter describes the symptomatology as follows: "With the onset insidious in character and without marked ciliary injection, the cornea is found to contain many irregularly outlined, gray, deeply placed, punctate lesions, beginning either in its central portion, or more rarely in its periphery. These punctate lesions gradually fuse, and the cornea becomes opaque without decided involvement of its surface or of Descemet's membrane. Following the infiltration, vessels push from the periphery into the parenchyma of the cornea, but the vascularity is usually less pronounced than in the well-known salmon patch described by Hutchinson, in consequence of which lachrymation and photophobia are not prominent symptoms. The cornea after a short time begins to clear, and usually without marked signs of involvement of the uveal tract returns to almost normal transparency, resulting in a more or less complete cure in from five weeks to three months." This description is quoted in full in order to show by contrast the usual picture of the disease and the decided deviation from it in the case described in this paper.

Fage holds that parenchymatous keratitis may not only relapse, but that after apparent cure it may reappear after an interval of months or years. All the relapsing cases were, however, the result of hereditary lues. The affection is usually stated to be not only mild, with slight iridic symptoms, but also to be unilateral. Stephenson thought that the disease was unilateral because of treatment, and that bilateral cases occurred in untreated patients. A majority of the cases reported have occurred at a time long after the initial lesion, as late even as ten or more years. Very few cases are reported as occurring one year or less after infection.

The case report is as follows:

C. R., male, aged 17 years, came under observation January 9, 1909, with the right eye affected. There was much photophobia and lachrymation. The eye had been sore one week. He gave a definite history of a primary lesion a little less than one year before. The history was also fairly definite as to secondaries. ODV=18/240; OSV=18/19.

The tentative diagnosis at the first visit was iritis. Soon, however, the true character of the affection declared itself. The corneal cloudiness became so bad after the left eye became involved that the patient had to be led about. The opacity in each cornea was very dense; salmon patch formation was marked in each eye. He was put in a hospital, and given roborant treatment in addition to inunctions daily of Hg. The process slowly subsided under general and local treatment, and considerable clearing of the cornea took place. He was under constant observation for six months. When discharged, he had large corneal clouds which compromised vision very much; vision = 18/240. When seen a year later, vision

= 18/120, and the patient was able to hold a position as driver for a drug house. The left eye became involved about two months after the right one.

Here we had a case showing a typical picture of parenchymatous keratitis such as occurs with hereditary lues. Both eyes were involved, the affection was very severe and prolonged, and vision was much reduced. He had none of the stigmata usually associated with hereditary syphilis—no Hutchinson's teeth, no saddle nose, no rhagades, and no deafness. In view of the opinion held by Fage, it might be contended that this was a reappearance of a former parenchymatous keratitis due to hereditary lues. No history of a previous eye trouble was obtained, and, furthermore, an initial lesion and secondary manifestations seemed satisfactorily vouched for. It is possible for an individual to have hereditary lues, undergo cure and later acquire a fresh infection. Igersheimer in discussing the treatment of this disease refers to that possibility. He advises that all cases should be energetically treated with salvarsan and Hg. to avoid complications such as pathological changes in the nervous system. He states that an antisyphilitic course has no influence upon the keratitis itself. The effect of such treatment may be so successful that the patient may contract syphilis a second time. The age of the patient reported here, 17 years, is well within the age limit of those cases generally accredited to hereditary lues. He was of a development equal to that of a boy of 20 years, was sexually active, and had on numerous occasions laid himself liable to venereal disease. His age, therefore, was not against acquired syphilis.

In reporting this case, I am cognizant of the fact that the issue may immediately be raised that this was an ordinary parenchymatous keratitis in an hereditary luetic and running a typical course. Arguments apparently in favor of this view are the age of the patient, the severity of the disease, the reduced vision from corneal opacities, and the fact that it was bilateral. Amat reported five cases, two bilateral, occurring from two to five years after infection. He found such cases in their clinical aspect did not differ from those due to hereditary syphilis. To rule out absolutely hereditary lues, not only the life history of the patient is necessary, but also the history of the father and mother, prenuptial and marital. For various reasons, this was impossible. Had this patient been an hereditary luetic it must be granted that he was cured of his lues, for on no other supposition can we admit of a new infection with initial lesion and secondaries. The question has been brought up before whether it is possible for an individual with the hereditary taint to acquire lues primarily and whether parenchymatous keratitis in such a case is due to the inherited rather than the acquired disease. M. Frank reported a case in which the question of the occurrence of this lesion in acquired syphilis was raised. The keratitis developed five years after an initial lesion, and cleared up under mixed treatment. The blood test gave a positive Wassermann. The central incisors were slightly notched, and this, together with markings at the angles of the mouth, suggested inherited lues. As an additional test, it was suggested that a Wassermann of the parents be made.

It is probably definitely settled that lues, either hereditary or acquired, is curable, the best proof of this being the possibility of acquiring a true initial lesion and sequelæ. So in this individual and in any parallel case, even though an hereditary taint might be proved, we should still be justified in looking upon the acquired infection as the one giving rise to subsequent active luetic manifestations. In view of our present knowledge concerning the causative factor of syphilis, the treponema pallidum, it must be granted that when the organism is eradicated from the body, active processes are impossible. Degenerative changes inaugurated by the spirochete can, of course, still progress after the organism has long since vanished. It is generally conceded that parenchymatous keratitis is due to the presence and activity of the spirochete and is not a degenerative process. J. Herbert Fisher looks upon parenchymatous keratitis from acquired lues as generally a tertiary manifestation. A. E. Davis states that it usually occurs as a late secondary sign of the disease or during relapses in the tertiary stage of the general disease. Gifford made a strong plea for the prophylaxis of parenchymatous keratitis, referring principally to the hereditary form.

It is for the very reason that treatment is more or less thoroughly carried out that the corneal manifestations of acquired lues are relatively infrequent, that the condition is mild in type, and that it is usually unilateral. Where treatment has been given for but a short time or not at all it is not unreasonable to expect a parenchymatous keratitis in an acquired lues to run a course analagous to that in the hereditary form.

The points I most desire to call attention to in this case report are:

(1) The age of the patient, young enough to have a keratitis due to hereditary lues, though it may occur at any age, but is unusual late in life, and old enough to acquire lues and suffer its corneal manifestation; (2) the fact that it was bilateral; (3) that it appeared within one year of the initial lesion; (4) that the keratitis was most severe and that iridic symptoms, photophobia and lachrymation were pronounced; (5) the dense opacification of the corneæ with typical "salmon patches," the clearing progressed to a considerable degree, permanent opacities, however, remaining—the process in its entirety appearing like a severe one as it occurs in the hereditary type of cases; (6) if we admit in such instances the possibility of the keratitis being due to a previous hereditary taint, then it will be necessary to revise all our theories concerning parenchymatous keratitis and the curability and transmissibility of syphilis.

PITTSBURGH OPHTHALMOLOGICAL SOCIETY.

DR. E. B. HECKEL, CHAIRMAN.

OCTOBER 12, 1914.

Radium Treatment of Sarcoma of Orbit.

Dr. Heckel, presented a patient, age 50 years, by whom he had been consulted in April 1912, on account of a somewhat painful, blind, shrunken left eye ball. Immediate removal of the shrunken blind eye was advised but the patient decided, after consulting several other oculists, not to have it enucleated. In September 1913, he returned with a decided increase in the orbital contents. He was then sent to the Allegheny General Hospital, where the eye was removed. The sclera had been perforated by a very strongly pigmented mass about the size of the eye ball itself, which was removed intact with the eye ball. The specimen was sent to the laboratory and later pronounced melano-sarcoma by Dr. Haythorne, the pathologist. The orbit healed kindly and left a good socket; the patient was cautioned about a probable return of the neoplasm and asked to return as soon as anything was noticed. The orbit remained quite negative until March 10th, 1914, when the orbit began to fill very rapidly. The patient was seen on March 24th, with the orbit quite filled and bulging. On March 27th, 1914, a tube of 53 milligrams of radium element, screened by 2 m. m. of lead and rubber tubing, was inserted into the orbit, after making a free incision, and allowed to remain in place for eleven hours. After this exposure the orbital contents became decidedly less and by April 10th, the tumor mass could be distinctly palpated and seemed circumscribed, so that it was decided to remove as much of the mass surgically as possible. On Tuesday, April 14th, a mass about as large as a chestnut was removed from the orbit, under ether anaesthesia. The orbit was packed and on the next night 53 milligrams of radium element, screened by 2 m. m. of lead and rubber tubing, was inserted into the orbit and allowed to remain in place for thirteen and one-half hours. Since then, there has been a decided decrease in the orbital contents. There was no discomfort nor any elevation of temperature following either of the radium exposures. The patient continues under observation.

Dislocation of Lens into Vitreous.

The following case was exhibited by Dr. Stieren:—

J. H., male, 45 years of age, was struck in the right eye six weeks before with a broom handle. Under the care of his local physician the pain and inflammation of the eye was relieved so that the only symptom complained of, when first seen by him, April 4th, 1914, was failure of vision in the right eye, which equalled counting of fingers at three feet.

External examination of eye; cornea and sclera normal, pupil partially dilated, 4 mm. in diameter; iris slightly tremulous; anterior chamber slightly deeper than in left eye. Tension 20 mm. of Hg. With +15 D. S., vision could be brought to 6/10 and with a lens of similar strength in the ophthalmoscope the details of the fundus could be plainly seen, revealing the crystalline lens lying in the vitreous chamber, well forward. Left eye, with +3.50 D. S.=V 6/6.

Ophthalmoplegia Following Decompression Operation.

Dr. Weisser reported a case of complete ophthalmoplegia in one eye, and ophthalmoplegia interna and partial ophthalmoplegia externa of the other, in a young girl of twenty-four years of age, following a decompression operation for the relief of increased cerebral pressure (suspicion of tumor of the brain). Both optic nerves were normal following the operation but subsequently, in 4 or 5 days began to get pale and the patient's vision fell to light perception. Before the operation vision and fundi were normal. Patient has not been seen since ten days after the operation, as she was removed to her home in West Virginia.

Trachomatous Pannus.

Dr. Sturm reported a case of trachoma with marked pannus that was greatly benefited by rubbing mercury bichloride into the conjunctiva. The patient was a male, age 32, and was first seen in April 1913 when the vision of the right eye was fingers at three feet and of the left eye at one foot. Three days later, vigorous rubbing of the conjunctivae was performed with 1-500 mercury bi-chloride solution, followed by the use of iced compresses. Ten days later, the rubbing was repeated; marked improvement resulted and the vision steadily improved. Copper solution was used at home and brown ointment was employed at various times at the office. The vision is now 20/70 in the right eye and 20/100 in the left. There still persists a small vessel, extending across the cornea of the left eye to a salmon-colored patch over the pupil. This vessel has been repeatedly cut and ligated but it still remains, although it is gradually getting smaller.

Optic Neuritis.

Dr. Curry reported a case, female aged 31, who gave a history of impaired vision of the left eye beginning some days before. The previous health had been good. She had had nasal treatment but no sinus trouble. Her two children were in good health. Upon examination, a unilateral optic neuritis was discovered; the vision was 20/70 and continued to fall rapidly until in a few days, it was 20/200. A large central scotoma developed ten days after the vision began to fail and vision then fell to fingers at eighteen inches. The right eye was normal. No cause for the trouble could be found. Her husband, a physician, had had trouble for several years with his tibia and had had an operation or two performed thereon; he showed a positive Wassermann reaction and was benefited by the use of salvarsan. Neither the patient nor the children showed any evidences of lues and a Wassermann test was negative. The trouble was said to have started after a fright at night, as on the next day she had severe pain in the eye ball.

Dr. Heckel stated that he had seen a case of acute iritis of both eyes in a horse following bites by a dog on the rump and hind legs. In his opinion, the iritis was due to fright.

Adolph Krebs,
Secretary.

TRANSACTIONS OF THE PHILADELPHIA POLYCLINIC OPHTHALMIC SOCIETY.

November 5, 1914.

Dr. Wendell Reber exhibited a case which when he first saw it presented some of the characteristics of trachoma and vernal conjunctivitis. Both lids were filled with granules but on closer inspection there were a great many flattened, pavement-like granules resembling what the dermatologists call plaques. The suggestion of iridescence in the conjunctiva was unmistakable. The condition has existed for nine years without the slightest involvement of either cornea, the patient being 19 years of age. The granules were almost cartilaginous in texture and a very fine false membrane could be detached from among them at almost any time, so that it was easy to pull out stringy or elastic secretion that by certain authorities is held to be characteristic. The patient had practically no scratchy sensation from the large pavement-like granules. Mitigated copper stick with copper citrate ointment at night as a therapeutic test aggravated the condition. A two-grain to the ounce solution of copper-sulphate has proved more efficacious than any other application in this case.

Dr. Reber presented the case particularly for the purpose of differential diagnosis between vernal conjunctivitis, which he thought this case illustrated and trachoma which was the subject for discussion at the meeting.

Dr. Clarence P. Franklin, (by invitation) Trachoma in Pennsylvania.

Dr. Franklin said that the status of trachoma under the law of Pennsylvania made it a reportable disease but that difficulties in diagnosis caused much laxity in reporting trachoma as a contagious disease. There are many cases existing in the state unreported. The law makes no provision for care or segregation after the disease is reported.

He spoke of the scope of the work of the Health Department looking to eye examinations to find trachoma and the subsequent care of the disease, and he gave a sketch of the system in use in England at present, which consists of School-Homes to continue the education of children who have trachoma, while under public care and treatment.

There has been a plan advocated by the Commission of the Conservation of Vision for an initial School-Home-Hospital, located near Pittsburgh, as a center of greater density of trachoma cases among the foreign-born coal and iron mining population. This plan is in temporary abeyance, awaiting the result of a conference among all those interested, both sociologically and medically, looking toward the introduction of a bill into the next legislature requiring all hospitals receiving state aid to open their doors to cases of trachoma, gonorrhea, syphilis and tuberculosis.

Dr. William Zentmayer, "The Differential Diagnosis of Trachoma."

In the first stage of the disease it might be mistaken for follicular conjunctivitis. In the second stage the affections with which it might be confounded are vernal conjunctivitis, Parinaud's conjunctivitis and tuberculosis of the conjunctiva. In the third stage there is a resemblance to pemphigus of the conjunctiva and to shrinking of the conjunctiva following burns.

According to Axenfeld the finding of Prowazek-Halberstaedter inclusion bodies in a case of follicular affection of the conjunctiva would strengthen the diagnosis of true trachoma but their absence would not exclude trachoma.

Dr. Luther C. Peter, "Treatment of Trachoma."

Dr. Peter feels that our state laws are inadequate to meet our needs in the prophylactic treatment of trachoma. The following-up treatment should be rigidly enforced after they leave the hospital, and ambulant cases should be instructed as to the dangers of infecting those about them, also as to the necessity for using their own washing utensils, linens, etc.

The first indication of trachoma, the infection, is best treated by simple, non-irritating collyria, such as boric acid wash and normal saline, rather than strong antiseptic solutions such as bichloride of mercury. Nitrate of silver should be applied to the lids daily by the surgeon to relieve the inflammatory symptoms, supplemented at home by 10 to 20 per cent argyrol solution. No operations are indicated in this stage other than canthotomy to relieve the blepharospasm and pressure.

The second, or beginning cicatricial, state is best treated by copper crystals applied to the everted lids once in 48 hours. This may be supplemented by home use of citrate of copper ointment, increased from 5 to 15%. Surgical interference hastens recovery at this stage. The pricking of each follicle by a sharp bistoury, or Beers' knife, followed by a careful expression of the follicles with a suitable roller forceps, under general anesthesia. accomplishes a maximum result with a minimum amount of damage to the tissues. After operation the copper treatment should be again resumed. Dr. Peter has found the use of glycerite of tannin, followed by the dusting of an iodine bearing powder, such as aristol, valuable in the final stages of the disease. They are also applicable in the acute stages when acute inflammation has disappeared and the patient shows signs of recovery.

The third, or cicatricial, stage is largely the treatment of the sequelae of the disease and is therefore largely surgical.

Treatment of pannus, in a majority of instances, when the pannus is of mild degree is that of the general treatment of trachoma. It usually disappears with the disappearance of other symptoms. Severe forms may require more heroic treatment, such as peritomy, and when the corneal tissue becomes the site of ulceration, treatment suitable to the condition should be employed.

Four points should be emphasized in the treatment of trachoma.

First. The use of mild collyria, rather than strong mecurial washes.

Second. The employment of such surgical operations, when indicated, as will bring about a maximum result with a minimum damage to the tissues.

Third. Most careful refraction of trachomatous patients after recovery.

Fourth. A following-up system should be practiced so as to insure complete cure.

DISCUSSION. Dr. William Campbell Posey said he had seen two or three cases similar to that shown by Dr. Reber and even a little more marked and where the follicles were harder. There was no question of the uselessness of rolling in the cases referred to, the only thing to do was to pare them down with a very sharp follicle knife. Until they were pared down they irritated the cornea.

He said the differential diagnosis of trachoma is simple enough. In vernal conjunctivitis the cornea is usually clear, while the conjunctiva is characterized by a milky-white haze. Dr. May has thought that cases like this one of Dr. Reber's and the ones I referred to, presented a mixed type but I think they are cases of vernal conjunctivitis which have persisted for some years. The granules are so hard that the cold weather does not affect them.

Within the last week I had a young man sent to me with inflamed eyelids. On first looking at the lids I thought it was trachoma. The young man had adenoids, and evidences of inflammation of the lymphatic system. The inflammation in the eye was phlyctenulosis. Although the inflammation had persisted for a number of years the cornea was clear and the granules were in ridges. The man was under 20 years of age. The adenoids were taken out, the lids were rolled and treatment was about the same as that outlined by Dr. Peter.

If possible children with trachoma should be sent to a trachoma school, but you cannot do that with adults. It is a very difficult sociological problem. Say a man has a large family, what are you going to do with him, for after three or four weeks of hospital care, he must be turned loose. His family must be cared for. To my mind the thing to do would be to have the social worker go to his house and show him how to live and also go to his place of business and explain to his fellow-workers the danger this man may be to them. There must be better housing conditions for men afflicted in this way. The best plan would be to send these men and their families to a detention hospital and let the men go out and work, while the families were cared for but that of course is an expensive plan. The best thing is to open the wards of some hospitals to this class of cases. The development of the social service system will see that these cases are taken care of.

W. Walter Watson, M. D.,
Secretary.

ROYAL SOCIETY OF MEDICINE—SECTION OF OPHTHALMOLOGY.

MR. PRIESTLEY SMITH, F. R. C. S., PRESIDENT.

November 4th, 1914.

Mr. A. Hugh Thompson showed a young girl who had dilated pupil of Argyll-Robertson type, with well marked contraction on closure of lids. The condition was not congenital in her, because two years ago her pupils were normal, and she had only slight myopia. The knee jerks were normal. He also exhibited a case of one-sided internal opthalmoplegia. The man was invalided from the Navy two years ago on account of supposed aneurysm. He was a stoker in the Navy, and since he left that he had been doing similar work—stoking—in a brewery. No aneurysm had been found, though he was carefully examined by Sir John Broadbent. Mr. Rockcliffe spoke of two cases in his experience with mydriasis and iridocycloplegia. In one there was a strong family history of retinitis pigmentosa, but in the patient there was no retinal or pigmentary change. One patient's end was in an asylum as a general paralytic.

Mr. N. Bishop Harman showed a case of congenital entropion. The lashes in the lower lid were permanently erect, and the child was born with the condition. The meibomian glands seemed deficient. The mother was normal, but the grandmother was said to have had a double row of lashes. He proposed to split the lid, so as to separate the lashes from the glands, and graft between the two a strip of mucous membrane. If that succeeded, he expected the lashes would be prevented from reaching the cornea again. Mr. Mayou referred to three similar cases which he had had. He operated upon them by taking out a narrow band of skin on the outer side of the lid. There had been no recurrence, though one was operated upon five years ago.

Mr. N. Bishop Harman read notes of a case of high myopia in an infant.

Mr. W. H. Jessop showed a case of tumour of the lower lid, which he regarded as a lymphangioma. A former term applied to it was elephantiasis nostras. Skiagrams showed nothing abnormal about the bones, and skilled nasal investigation was negative. Lieutenant-Colonel Elliot mentioned a similar case which he saw in India and which was found to be sporotrichosis ochonelia. Mr. Leslie Paton said he had seen a similar case following the extensive scarring of lupus, and there was complete blockage of the lymphatic ducts draining the eyelid. He sent the case to a colleague with the request that he would establish a permanent drain into the lymphatics of the lip. Mr. Harman reminded members of a case shown at the Laryngological Section in which draining was done in the neck, and answered fairly well.

Mr. A. W. Ormond exhibited a doubtful case for diagnosis, which was generally regarded as inflammatory.

Mr. H. L. Eason exhibited an interesting example of confluent tubercle of iris. Tuberculin had not improved it. As perforation was ocurring in the ciliary region, the only course was removal of the eye. He had had a case in which perforation occurred in three weeks; in this case it commenced in the fifth week of the history.

Mr. Dawnay showed a patient suffering from intra-ocular metastatic carcinoma.

Mr. W. T. Holmes Spicer read a communication entitled "Cysts in the Anterior Chamber arising from the Pars Ciliaris Retinae," and illustrated it by a number of slides. The case had been under observation seven years; it began with a white spot at the edge of the pupil at three months of age. At 16 months, when first seen, there were three opaque finger-shaped masses coming into the anterior chamber from behind the iris. Four years later these had disappeared, and a cyst about 4 mm. in diameter was seen floating freely in the anterior chamber. Other cysts appeared later, and finally there were seven, floating like toy balloons in the anterior chamber. In the meantime the eye had become glaucomatous, a ciliary staphyloma had formed, and the eye was removed. The pathological examination was made by Mr. Greeves. It was found that the cysts were formed of embryonic retinal tissue, containing vitreous. They had their origin in the pars ciliaris retinae, starting from cellular membranes, which grew over the iris and also into the vitreous; the cysts grew on the surface of these membranes. There was, in many places in the walls of the cysts a resemblance to glioma tissue. The case further proved the non-mesoblastic origin of the vitreous.

Mr. Treacher Collins, discussing the case, said it bore out the view of embryologists that the vitreous humour was derived from neural epiblast; it further showed it was derived from only one portion of it.

Mr. Mayou referred to a case of his own in which there was a pigmented tumour in a microphthalmic eye, consisting of epithelial cells. It only occupied an eighth of the segment of the ciliary body.

Mr. W. Lang spoke of a case he saw with Professor Fuchs in which there was a semi-translucent brownish cyst in the anterior chamber. Since then he had had a similar case of his own, but an attempt to deal operatively with it was not a success.

COLORADO OPHTHALMOLOGICAL SOCIETY.

D. A. STRICKLER, M. D., PRESIDENT.

October 10, 1914.

Penetrating Injuries of the Eyeball.

Dr. W. C. Bane presented a young man whose left eye had been struck on September 10, 1914, by a dead branch of a tree. The cornea had been perforated just below the center, producing a vertical cut 3mm. in length. The point of the branch had also penetrated the lens, and had cut the lower margin of the iris.

On September 12 the vision of this eye was fingers in the lower part of the field of vision at 12 inches. The lens had become opaque, and there had been slight tenderness of the eyeball during the second week after the injury. During the second week and part of the third the anterior chamber was over half full of cortical material. Treatment had consisted of atropin and dionin locally, with pressure bandage; and internally ten grains of aspirin four times daily. Much of the lens had been absorbed, and there were now good light perception and projection.

DISCUSSION. Dr. Black believed that the X-ray should be used more frequently, when there was a partial history or a possibility of a foreign body having penetrated the eyeball.

Dr. Walker thought that if a Haab magnet were used, the foreign body should not be drawn into the wound, on account of the risk of traumatism, although the magnet might be applied through the wound of entrance if this were in the scleral tissue.

Dr. Bane presented a young man who on June 8, 1914, while striking a screwdriver the metal of which was exposed in the end of the handle, had been struck by something in the left eye. At the time he had supposed the fragment to be from some hard brick on which he was working. When seen two hours after the injury, there was a small cut in the palpebral conjunctiva of the lower lid, and ecchymosis of the eyeball down and in, but no evidence of a break in the ocular conjunctiva. The vision of the left eye was then 5/30. On the fourth day vision had rison to 5/10. On the eighth day there was some cyclitis, with vitreous haze. By the twenty-second day the inflammation had subsided, and vision was 5/5. On the fiftieth day vision began to fail again, and by the sixty-first day it had fallen to 5/20 plus. There had been no eye or headache, the vitreous was clear, and the eyeball was free from congestion. The pupil measured 7 mm. in diameter. In the lower part of the fundus was a grey black mass surrounded by whitish tissue. A test with the sideroscope gave positive evidence of the eye containing metal, and an X-ray picture located a foreign body measuring 7 by 1 mm. situated 17½ mm. back of the center of the cornea, 10 mm. below the horizontal plane and 7 mm. to the nasal side of the vertical plane. On July 14th the foreign body was removed with the magnet through a scleral incision between the internal and inferior recti. Five weeks after removal the vision was 5/5. The pupil had become almost as small as that of the other eye.

Retinal Atrophy.

Dr. Melville Black presented a woman of 46 years who three years previously had had a general enlargement of the lymphatic glands, with sore throat, and six months later had begun to notice blurred spots in the visual field. After a further interval of six months night blindness developed, and also photophobia and flashes of light before the eyes. The vision in each eye was 20/20. In the left visual field, there was an almost complete scotoma around the fixation point. It was not now possible to map out any other blind area. The patient stated that Dr. Würdemann had diagnosed the condition as atrophy of the retina.

DISCUSSION. Dr. Jackson thought that retinal atrophy was possibly the anatomical basis of ths ocular symptoms. It would be advisable to take the blood pressure.

Advancement of Superior Rectus.

Dr. F. R. Spencer presented a woman who after tenotomy of the right superior rectus muscle thirteen months previously had suffered from diplopia, with which were associated nausea, vertigo, and rarely vomiting. In distant vision the right eye was about four degrees lower than the left, and she was unable to elevate the right eye without having diplopia.

With a plus 1.75 sph. right vision was improved to 15/20 minus, and with a minus 1.00 sph. combined with minus 0.75 cy. ax. 170 degrees left vision was improved to 15/10 minus. The fundi were negative, with the exception of slight arteriosclerosis of the retinal vessels.

Advancement of the right superior rectus was performed under cocain anesthesia, Worth's musculo-capsular advancement being used and over-correction of about three degrees made. At the present time she had orthophoria and was perfectly comfortable.

Polycythemia.

Dr. Edward Jackson presented a woman of 40 years who was under the care of her general physician for polycythemia. Her blood count showed 9,500,000 red cells. Hemoglobin was 110 per cent. The conjunctival veins were enlarged. The retinal veins were large and very dark, but not tortuous. The arteries were normal, but looked light by contrast. Five disc diameters above the right disc, near a branch of the superior nasal vein, was a small spot with indefinite edges. There were similar spots down and out from each macula. The largest spot was smaller in diameter than the largest retinal veins. There were no hemorrhages.

Retro-choroidal Hemorrhage.

Dr. Edward Jackson presented a man of 63 years who in August last had been struck on the outer edge of the left orbit by a heavy board. Since the accident there had been no vision in the left eye, which had however shown no other sign of injury. There was no reaction of either pupil to light thrown into the left eye. The margin of the pupil was generally adherent, and there was a film of deposit on the lens capsule. The anterior vitreous was clear, and the fundus, seen somewhat indistinctly through a posterior haze, showed choroidal vessels. The tension of the eyes was R. 32, L. 6 mm. A probable diagnosis of retro-choroidal hemorrhage was suggested, with a possibility of sarcoma of the choroid.

Carcinoma of Ciliary Processes.

Dr. E. R. Neeper had seen a man of 71 years who, after the last of three separate injuries to the right frontal bone, had noticed a dark spot in front of the right eye, with lowered vision more recently. The temporal half of this eye would not transilluminate and the ophthalmoscope showed through clear media a mass of detached retina occupying about 1/5 of the vitreous chamber at about axis 135 degrees. The retinal area showed no folds or convolutions such as are often apparent in detached retina. The base of the iris from about 120 to 150 degrees during the next month underwent a degeneration simulating amyloid, there being chain-like areas looking much like globules of fat; and during the same period the lense became entirely cataractous. Enucleation was advised but rejected. Two months after the eye was first seen it was enucleated, and the growth found to be carcinoma of the ciliary processes.

Trephine Operation for Glaucoma.

Dr. Melville Black reported a case of bilateral sub-acute glaucoma, in which the tension of the right eye had been 46. and of the left 80 mm. of mercury. The Elliot trephine operation had been performed on each eye combined with iridectomy. The tension of the right eye fell almost at once. but the tension of the left eye. as tested with the fingers, came down more gradually. Ten days after operation the tension as measured with the Schiötz tonometer was R. 9, L. 13 mm.. although the eyes did not feel so soft as this to touch.

Corneal Leucoma with Calcareous Degeneration.

Dr. E. R. Neeper reported a case of bilateral corneal leucoma in which the patient had come complaining of irritation in the left eye. Examination showed the surface epithelium to have been rubbed off a small part of the left leucoma. and the denuded area was found on close examination to be occupied by a small hard body. On removal this proved to be a calcareous deposit, measuring about 1¼ by 2½ mm. There was no appreciable increase in vision after the operation.

Orbital Cellulitis from Frontal Sinuitis.

Dr. D. A. Strickler presented a youth of 16 years who had come on account of proptosis and diplopia, with severe ocular pain and swelling of the upper lid. The temperature was raised, and there were other symptoms of sepsis. A deep incision of the upper and inner angle of the orbit did not produce any pus. A few days later suppuration of the anterior and posterior ethmoid cells was diagnosed and drainage attempted. After another three days all the symptoms were much exaggerated, and there was a fluctuation at the upper outer angle of the orbit.

Free incision under general anesthesia gave vent to abundant thick creamy pus and was followed by relief of the acute symptoms. The discharge from the orbit continuing, and X-ray examination showing involvement of the frontal, ethmoidal, and maxillary sinuses, a complete Killian operation was done by Dr. Levy. An opening was found in the floor of the frontal sinus, leading into the orbital abcess; thus showing the frontal sinus disease to have given rise to the orbital cellulitis.

William H. Crisp,
Secretary.

CORRESPONDENCE

December 15, 1914.

Editor OPHTHALMIC RECORD, Chicago, Ill.

Sir:—In the December, 1914, issue of the OPHTHALMIC RECORD you published a short article from my pen, "Concerning the Use of Bifocals in the Treatment of Convergent Strabismus in Little Children." Unless one were careful to read the last words in this article he would carry away the idea that I was entitled to priority in the use of this method. This I wish to disclaim. At the time I was writing the paper in question one of my assistants went through the literature and reported to me that he could find nothing bearing on the subject. I therefore presented the communication at the recent meeting of the American Academy of Ophthalmology and Oto-Laryngology without knowledge of the fact that Dr. Lynn Emerson of Orange, New Jersey, mentioned this method some five years ago in a paper on "The Treatment of Convergent Strabismus." It seems that he had subjected a number of patients to the use of bifocal glasses with the most gratifying results and he was justified in his enthusiastic advocacy of the method.

I might mention that as long as fourteen years ago I had some of my youthful strabismics wear a glass about 2 diopters stronger in their reading and writing glass than in their distance glass, just as I had been doing the same thing in high esophoria for the last eighteen years. At the same time the incorporation of a weak glass in the bifocal glass as a further evolution of the idea seems to have been first presented by Dr. Emerson, and if any name is attached to the method it should certainly be known as "Emerson's method."

Yours very truly,

WENDELL REBER.

The next meeting of the Oxford Ophthalmological Congress will be held at Keble College, Oxford, England, July 14, 1915. The subject for discussion will be Industrial Accidents. Mr. Sydney Stephenson is Master and Bernard Cridland Hon. Secretary of the Congress.

NEWS AND NOTES.

Personals and items of interest should be sent to Dr. Emory Hill, 122 South Michigan avenue, Chicago, Ill.

As these columns go to press on the 15th of the month previous to publication, contributors will kindly send in their items before that date.

Dr. S. Lewis Ziegler has been appointed director of public health charities of Philadelphia.

Dr. S. Albert Blair of Chambersburg has been appointed chief surgeon of the newly opened Hospital for Diseases of the Eye, Ear, Nose and Throat in Scranton, Pa.

The Indianapolis Eye, Ear, Nose and Throat Hospital has been recently incorporated as a result of the growth of a clinic conducted in connection with one of the churches of that city.

Dr. George W. Mahoney has been elected vice-commander of the Veteran Corps of the Seventh Infantry of the Illinois National Guard.

The city authorities of Berlin have received the sum of $25,000 from Frau Minden for a fund to be used for soldiers who lose their eyesight in the war.

At the annual meeting of the Seaboard Medical Association of Virginia and North Carolina, held in Goldsboro, N. C., Dr. Beverly R. Kennon of Norfolk was elected vice-president.

Dr. Joseph O. Stillson has been appointed ophthalmologist on the consulting staff of the City Hospital of Indianapolis. Dr. Augustus L. Marshall is alternate ophthalmologist on the staff.

A farewell dinner was given on January 7 by the staff of the Illinois Charitable Eye and Ear Infirmary in honor of the retiring superintendent, Charles T. Gerrard. A loving cup was presented in token of appreciation of the sixteen years' service of Mr. Gerrard. Dr. James L. O'Connor is the new superintendent.

At the forthcoming meeting in Chicago of the educational council of the American Medical Association the question of post-graduate education in ophthalmology will be discussed by Drs. Frank Todd of Minneapolis and Edward Jackson of Denver.

Dr. J. A. Ellegood of Wilmington, Del., reports the adoption of the Allport method for examining eyes and ears of school children in the state of Delaware. This makes the ninth state to adopt Dr. Frank Allport's method.

The statement in the January issue of the RECORD that Dr. E. K. Findlay had been appointed assistant surgeon to the Illinois Charitable Eye and Ear Infirmary was an error. Dr. Findlay was appointed surgeon after several years' service as assistant surgeon in the same hospital.

While in Chicago as guest of honor of the Chicago Ophthalmological Society Dr. Wendell Reber of Philadelphia was tendered a luncheon at the University Club by Dr. Casey Wood.

The following deaths of ophthalmologists are announced:

Dr. Jacob F. Trump of Hamilton, Ohio.
Dr. G. W. Foster of Auburn, N. Y.
Dr. F. L. Foster of Fond du Lac, Wisconsin.
Dr. W. E. Fischer of St. Louis.
Dr. E. L. Washburn of East Berkshire, Vermont.

The annual meeting of the Chicago Ophthalmological Society was held in the Hotel LaSalle on the evening of January 18. The guest of honor was Dr. Wendell Reber of Philadelphia who gave an interesting and comprehensive address on the subject of post-graduate education in America. The following officers were elected for the ensuing year: president, Dr. Richard J. Tivnen; vice-president, Dr. Wm. E. Gamble; secretary-treasurer, Dr. Paul Guilford (re-elected); councilor, Dr. J. Sheldon Clarke (Freeport).

CHICAGO EYE CLINICS.

Hour.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
9 A.M.	Richard S. Pattillo (P.-G.) G. W. Mahoney (Poli.) R. B. Stephenson (P.-G.)	*Geo. F. Suker (P.-G.) C. H. Francis (Poli.) A. Duncan (P.-G.)	W. F. Coleman (P.-G.) S. M. Hager (Poli.) H. N. Lyon (P.-G.)	G. W. Mahoney (Poli.) Rich'd S. Pattillo (P.-G.) R. B. Stephenson (P.-G.)	C. H. Francis (Poli.) R. B. Stephenson (P.-G.)	S. M. Hager (Poli.) C. W. Hawley (P.-G.) H. J. Morlan (P.-G.)
10 A.M.	Brown Pusey (N.W.U.) Geo. T. Jordan (N.W.U.) Robert Blue (N.W.U.) Every day, 10-12 A. M.					
1 P.M.	M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) Emily Selby (Inf.) *H. W. Woodruff (Inf.) *Oscar Dodd (Inf.) C. A. Leenheer (Inf.) D. W. Eiss (Inf.) E. R. Cressley (Inf.) C. C. Clement (Inf.) E. V. L. Brown (County) and Geo. F. Suker (County) Daily, 2:30 P. M.	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) E. K. Findlay (Inf.) Wm. E. Gamble (Inf.) J. B. Loring (Inf.) *Wm. H. Wilder (Inf.) S. L. McCreight (C.C.S.) E. V. L. Brown (Inf.) Robt. Von der Heydt (Inf.) L. G. Hoffmann (Inf.) A. P. Hunneman (Inf.) M. Goldenberg (Inf.) Francis Lane (Inf.) H. Walker (Inf.)	M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) Emily Selby (Inf.) *H. W. Woodruff (Inf. *Oscar Dodd (Inf.) C. A. Leenheer (Inf.) D. W. Eiss (Inf.) E. R. Cressley (Inf.) C. C. Clement (Inf.)	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) *Frank Allport (St. Luke's) *Frank Brawley (St. Luke's) E. K. Findlay (Inf.) Wm. E. Gamble (Inf.) *Paul Guilford (St. Luke's) *Casey Wood (St. Luke's) *T. A. Woodruft (St. Luke's) J. B. Loring, (Inf.) *Wm. H. Wilder (Inf.) S. L. McCreight (C.C.S.) E. V. L. Brown (Inf.) Robt. Von der Heydt (Inf.) L. G. Hoffman (Inf.) A. P. Hunneman (Inf.) M. Goldenberg (Inf.) Francis Lane (Inf.) H. Walker (Inf.)	M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) Emily Selby (Inf.) *Oscar Dodd (Inf.) C. A. Leenheer (Inf.) D. W. Eiss (Inf.) E. R. Cressley (Inf.) C. C. Clement (Inf.) H. W. Woodruff (Inf.)	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) E. K. Findlay (Inf.) Wm. E. Gamble (Inf.) J. B. Loring (Inf.) *Wm. H. Wilder (Inf.) S. L. McCreight (C.C.S.) E. V. L. Brown (Inf.) Robt. Von der Heydt (Inf.) L. G. Hoffman (Inf.) A. P. Hunneman (Inf.) M. Goldenberg (Inf.) Francis Lane (Inf.) H. Walker (Inf.)
3 P.M.	*Wm. E. Gamble (U. of I.) Wm. H. Wilder (Rush) H. S. Gradle Daily 3-5 (E. M. D.)	R. J. Tivnen (M. H.)	W. Allen Barr (C.C.S.) *Wm. E. Gamble (U. of I.)	Wm. H. Wilder (Rush) R. J. Tivnen (M. H.)	W. Allen Barr (C.C.S.)	Geo. F. Suker (P.-G.) 2-5 H. Cuthbertson A. Duncan
4 P.M.	W. F. Coleman (P.-G.) H. N. Lyon (P.-G.) 2-5	C. W. Hawley (P.-G.) 2-5 J. F. Campbell (P.-G.) H. J. Morlan (P.-G.)	J. B. Loring (U. of I.) E. K. Findlay (U. of I.) G. F. Suker (P.-G.) 2-5 H. Cuthbertson (P.-G.)	C. W. Hawley (P.-G.) J. F. Campbell (P.-G.) H. J. Morlan (P.-G.)	W. F. Coleman (P.-G.) 2-5 H. N. Lyon (P.-G.)	

*Special operative eye clinic.

ABBREVIATIONS:

C. C. S.: Chicago Clinical School, 1844 W. Harrison Street.

E. M. D.: Emanuel Mandel Dispensary, 1012 Maxwell St.

County: Cook County Hospital, W. Harrison and Honore Streets.

Inf.: Illinois Charitable Eye and Ear Infirmary, Peoria and Adams Streets.

M. H.: Mercy Hospital.

Poli.: Chicago Policlinic and Hospital, 221 W. Chicago Avenue.

P.-G.: Post-Graduate Medical School of Chicago, 2400 Dearborn Street.

N. W. U.: Northwestern University, 2431 Dearborn Street.

Rush: Rush Medical College, W. Harrison and Wood Streets.

St. Luke's: St. Luke's Hospital, 1416 Indiana Avenue.

U. of I.: College of Medicine, University of Illinois, Congress and Lincoln Streets.

THE
OPHTHALMIC RECORD
A MONTHLY REVIEW OF THE PROGRESS
OF OPHTHALMOLOGY

Vol. XXIV CHICAGO, MARCH, 1915 No. 3, New Series

ORIGINAL ARTICLES

CONGENITAL CATARACT.

BY
C. F. CLARK, M. D.
COLUMBUS, O.

Congenital and juvenile cataracts, when we consider their etiology, the various forms which they assume, their early and late manifestations, the involvement or association of other structures of the eye and especially when we turn our attention to the means which may be adopted for the restoration of vision, constitute one of the most fascinating chapters in the study of ophthalmology. In looking over a long series of records of various forms of cataract, many cases of great interest are to be found but there are few that seem more worthy of careful study than those of this class which may be followed from early childhood, and when a good result is obtained, unlike our cases of senile cataract, still have a long life before them in which to enjoy their restored vision.

It is not my purpose in the present paper to attempt a systematic consideration of the subject of congenital cataract nor to consume time in the consideration of case histories, but I wish to put on record a few cases which have been of great interest to me and at the same time to make some observations based on my experience in the management of such cases. In estimating the result we may hope for in a case of congenital cataract we must, of course, remember that we are generally dealing with a patient in whom there has existed some abnormal element in foetal development and, not infrequently, other portions of the eye are affected as well as the crystalline lens, and for this reason perfect vision may not be possible even though the lens be removed and a clear pupil obtained.

About twenty-three years ago, there appeared at my clinic in St. Francis Hospital a German girl, eighteen or twenty years of age, who had recently arrived in this country. She had divergent strabismus of the left and well advanced cataract in both eyes and stated that her father in Germany also had defective vision which was supposed to be due to the same cause. I extracted the lens from the right eye and after the adjustment of proper glasses she obtained good vision. A few years later she was married and in 1902, some eleven years after her operation, she called at my office bringing with her her little girl, Stella M., five years of age who had a central congenital cataract in each eye. At this time the mother stated that a younger child, Flora, two years old, also had the same trouble in both eyes but that two older brothers were free from such defect. Ten years later, in 1912, a third little girl. Hildegard, at that time nine years old, was brought to me with both eyes in the same condition and a little later still, the mother brought in a fourth child, a little boy of about four years old, with a similar, central cataract in each eye. The children were unusually bright and healthy and, with the exception of the cataractous lenses, and slight amblyopia, seemed free from physical defects of all kinds.

In this family we have a mother with three daughters and one son each of whom had cataract in each eye, there being two older sons who seem to have escaped. In each case, so far as the children were concerned, there was a dense, central opacity about which, in the cases of the older children, a more diffuse opacity developed gradually reducing vision.

An operation on one eye of the mother and from time to time, as the cases were presented to me, on each eye of each of the three little girls; needling, linear extraction and division of the secondary membranes were performed until we had obtained good, useful vision in each case. Fourteen operations have thus far been performed on the various members of this family and there are possibilities of more to follow.

In the earlier cases the usual method of procedure was employed, a needle operation with ample time allowed for absorption—but later, and this applied to all of the operations performed during the last few years, the more radical method was pursued with free division of the capsule and stirring up the lens substance at the first operation, keeping the case under close supervision in the hospital and extracting at the most favorable moment by the linear method. This plan, when properly carried out, with the patient under strict and frequent observation and the operator ready to choose the psychological moment for extraction, has seemed to me to yield the most favorable results and to be the most rational method for the successful treatment of such cases.

Congenital cataract, as we all know, even when operated at an early age, is often accompanied by a small mass of dense, cretaceous substance occupying the center of the opacity. This, of course, is not capable of undergoing absorption and, if the soft lens substance is allowed to absorb it is apt to remain deposited in, and adherent to the iris or in the angle of the anterior chamber and to be very difficult of removal. By the more rapid method of breaking up and softening the lens and prompt extraction through a free linear incision this can generally be pressed out with the soft lens substance or, if necessary, removed by free irrigation of the anterior chamber with normal salt solution. Cretaceous deposits of this character were present in both of the older children who were operated by the older method, at least so far as the first operation was concerned, and in both cases small hard, white masses remained which, while they have seemed even after the lapse of twelve years to do no harm are naturally not a source of pride to the surgeon.

If you will refer to our standard text books you will find that, while the method of rapid maturation by a fairly free breaking up of the lens substance and prompt extraction as soon as the lens is sufficiently disintegrated is mentioned, it is, by some of the best writers, spoken of as an extra-hazardous procedure, decided preference being given to the idea of awaiting the process of gradual absorption, and while I freely grant that excellent results may often be obtained by this slower method and that there are some cases in which it is to be preferred, an experience including a fair number of cases leads me to take issue with this view. I am open to conviction on the subject but, judging by the results of my own experience and putting the question to the crucial test I am free to say that, had I a child with congenital cataract, I would prefer the more rapid method of treatment with close supervision and extraction at the most favorable moment; I believe that this method is more in keeping with the principles of modern surgery as it subjects the eye to only a brief period of active disturbance under the constant supervision of the surgeon rather than prolonging the danger period.

We must, I think, grant that traumatic cataract, with which we are really dealing in either form of operation, imposes upon the lymphatic and vascular system of the eye a task, in providing for the absorption of the disintegrated lens substance, which taxes its capacity and tends to the establishment of a temporary glaucomatous process. This is unquestionably a condition accompanied by some danger, especially when we remember that in addition to the glaucomatous tendency and in spite of our most careful exclusion of the risk of infection from without by a strictly aseptic technique, we have the added danger of endogenous infections which cannot be ignored. But the practical question which the operator must face is this: is it better, in a child's eye which is elastic and capable of resisting the tendency to acute glaucoma, to excite a brief state of increased tension and possible infection under conditions completely under his control or to subject an eye to prolonged and repeated risks for extended periods with all of the chances of neglect or mismanagement which may occur when the patient is not under his immediate observation?

It is probable that a large majority of operators are, under ordinary conditions, favorable to the more rapid method of dealing with this class of cases but I have not long since seen a case in which in the hands of a well known surgeon in a western city the plan of gradual approach was pursued to such an extent that three or four slight incisions of the anterior capsule were made at long intervals with no effect further than to cause the development of small cicatrices. This case at once yielded an excellent result when a thorough division was made and the lens substance was extracted by the linear incision.

I would not have deemed the subject worthy of this discussion if it had not happened that in looking over some of our standard text books I found the slow method advocated by a surgeon of acknowledged authority whose opinion on all subjects I hold in the highest esteem. The older authorities, who wrote before the days of aseptic surgery when infections of unknown origin added a serious element to all surgical procedures, frequently recommended great caution with a very small first puncture of the capsule and three or four needlings during a period of three to six months, thus adding, in my opinion, enormously to the risk taken by the patient. The modern writer to whom I refer, however, no less an authority than Dr. G. E. deSchweinitz, on page 865 of the seventh edition of his admirable text book, after describing the method of performing discission makes the following statement: "Some operators invariably extract the lens a few days after needling, a practice which certainly hastens the restoration of vision, but which is not so safe as repeated discissions. The student should remember that even in the hands of the most skillful surgeons the operation of needling a cataract is surrounded with dangers, and sometimes has resulted in a general inflammation of the globe and loss of the eye—dangers which are lessened by strict asepsis, proper laceration of the capsule, and care not to undertake too much at the first operation."

Such caution on the part of the writer to the prospective operator is certainly most pertinent, as it is of the utmost importance that every precaution should be taken. And neither this nor any other operation involving opening the eyeball should be undertaken without every means at our command being employed to guard against sepsis or any other form of accident, but when such precautions have been taken and the case is kept under strict supervision, it is my deliberate judgment that the interests of the patient and his chances of an uninterrupted recovery will best be conserved by the very procedure which Dr. deSchweinitz here condemns.

I do not wish to pit my judgment against that of those operating in a broader field and, as I have already stated, I am entirely open to conviction on the subject but, a careful consideration of the surgical principles involved and a reasonably busy practice extending over a period of something more than thirty years leads me to exactly the opposite opinion; I bring the matter to your attention in the hope that we may obtain a free discussion of what I regard as a very important subject.

The question may be put in this manner: Under equally favorable conditions, as to asepsis and the state of the eye in other respects, does a fairly free discission of the lens followed by extraction within a short period varying from three to ten days during which the patient is kept under close observation and treatment, subject a child's eye to greater risk than repeated discissions distributed over a period of several months with all of the chances incident to such treatment?

The vision in each of these cases would be rated as fairly good, ranging in the neighborhood of 5/7.5 but, as the pupillary space was clear, it was evident that, as is so often the case in congenital cataract, there was a moderate degree of associated amblyopia, which alone prevented them from obtaining normal vision.

To demonstrate that by this method of operating, if the nerve and retina are normal, we may expect to obtain normal vision I will briefly detail two cases of juvenile cataract which I have now had under observation for several years. W. S., a grocer's clerk, age 17 yrs., consulted me in July, 1908, complaining of defective vision which had gradually increased for a number of years. An examination revealed the presence in both eyes of a well marked diffuse opalescence of the posterior half of the crystalline lens with more opaque peripheral sectors. The vision was 5/15— in each eye and was only slightly improved by weak concave lenses combined with concave cylinders. (R. $-.5^{s} \bigcirc -1.5^{c}$ axis 45° $= 5/15-$ L. $-.5^{s} \bigcirc -2.^{c}$ axis 180° $= 5/12-$.)

As the defective vision was interfering seriously with his work he was advised to have the lens removed, and a few months later, in October, 1908, the right eye was operated and in March, 1910, a similar operation was undertaken on the left eye. These operations were of the type described above; a rather free needling and breaking up of the lens substance in the first operation followed after a few days (in this instance seven to ten days) by linear extraction and a few weeks later by division of the secondary membrane. By this means a clear pupil was obtained with vision which, when fully corrected, was 5/5— in each eye and with appropriate reading glasses D.31/.37 and binocular vision. The patient obtained this vision with the following lenses: R. $+10.50^{s} \bigcirc +1.25^{c}$ axis 90°. L. $+11.^{s} \bigcirc +2.25^{c}$ axis 90° thus proving that the myopia corrected by concave spheres and cylinders required before operation, while vision of 5/15 was obtained through the opalescent, cataractous lenses, was due entirely to the influence on the refraction resulting from the condition of the lens, (lenticular myopia and lenticular astigmatism).

I will cite one more case in which the cataracts were of quite a different type but which as fully illustrates the advantages of this method of treatment which, in my judgment, has fully established its claim to consideration.

Edward B., 20 yrs. of age, employed as a leather inspector in a shoe factory, consulted me in April, 1910, complaining of a gradual decline of vision for some months. He had a large head with rather full eyes which proved to be myopic and, on close inspection, it was found that the anterior chambers were somewhat deeper than usual and the iris could be seen to tremble on sudden movement of the eyes. The pupillary reaction was good but the lenses presented irregular, opaque masses scattered through their otherwise clear substance, these masses being more noticeable in the lower segments. The patient stated that it was his belief that his vision had always been defective but that the defect had of late increased to such a degree as to interfere with his work. The ophthalmoscopic examination was somewhat unsatisfactory, owing to the lenticular opacities, but the disc region could be well made out in each eye and was found to be normal. Tension was slightly subnormal, rather more in the right than in the left and the general picture presented by the eyes suggested the possibility of fundus changes which led me to make a rather doubtful prognosis as to the ultimate acuity of vision to be obtained. The vision in the right eye was 5/45 increased by —7.^{s} to 5/15 — and in the left 5/22.3 increased by — 3.^{s} to 5/15 —.

This young man's employer was very generous and considerate but it became increasingly apparent that unless something could be done to improve his vision he would soon find it necessary to give up his position and for this reason it was decided, in spite of the somewhat unfavorable outlook, to operate upon the right eye. He was placed in the hospital and a free discission was performed followed in six days by linear extraction and two months later by division of the thin secondary membrane, after which his vision was 5/5 — later increasing to 5/4 —. Encouraged by the vision thus acquired he later became urgent that the left eye should also be operated and this was the more necessary because of an occasional, annoying diplopia. Accordingly in April 1912, two years after operating on the right eye, the left was subjected to the same operation yielding an excellent result even more promptly than that obtained in the right. In August 1912 his vision in each eye was 5/5 — and, as in the former case, he could use the eyes in combination, having good binocular vision. In August 1913 he reported for inspection with vision of 5/4 — in each eye and read D.37 with ease. Here again it was found that the myopia and myopic astigmatism present before the first operation had practically disappeared proving that they were of lenticular origin. The normal vision for distance was obtained with R. + 9.ˢ and L. + 10.ˢ whereas the right before operation had required — 7.ˢ and the left — 3.ˢ This patient, who, owing to his defective vision, had been on the point of giving up a good position, was able after operation to successfully pass the United States civil service physical examination for the position of railway postal clerk.

In this whole group and with many others operated upon during a series of years there has been no single instance of a serious result attributable to the method under consideration and I cannot avoid raising the question whether such an overcautious method of treating the subject as is found in some of our modern text books which insist that this method is extra hazardous, may not be an inheritance from the text book writers of a previous generation before the days of aseptic surgery.

REPORT OF AN UNUSUALLY LARGE MUCOCELE OF THE FRONTAL AND ETHMOIDAL CELLS. OPERATION AND CURE.*

BY

WILLIAM CAMPBELL POSEY, M.D.,

PHILADELPHIA.

Mrs. W., aged 69, consulted me on November 25, 1914, on account of a supposed growth of the left orbit, which had first appeared some two years previously. The initial appearance consisted of two lumps, the size of small beans, situated just below the brow, at its outer side. These soon coalesced and formed a marked prominence, which slowly increased, displacing the eye outwards and downwards, without giving rise to pain or inflammatory symptoms or appreciable derangement of vision. It was elicited that while the patient had suffered considerably from nasal catarrh some years previously, this condition had subsided in recent years and she deemed herself free from nasal disease. Uncorrected vision equaled 5/7.5 in the right eye, 5/9 in the left. The field of vision in each eye was normal.

As may be noted by the accompanying photographs, the left orbit and the entire region around it were much distorted, the globe being enormously proptosed down and out, probably

---

*Read before the Ophthalmological Section of the College of Physicians of Philadelphia, December 17, 1914.

1.5 cm. in advance of its fellow. The orbital swelling had also greatly restricted its movements, some downward and inward motion being alone conserved. The ocular tissues, however, had withstood the extraneous pressure remarkably well, as was evidenced by the normal appearance of the globe, both externally and internally, save perhaps for a slightly larger pupil and fuller retinal veins than were present in the other eye. The periocular swelling attained its maximum at the upper orbital rim, where it equaled a hen's egg in size, and gradually declined superiorly and inferiorly into the surrounding tissues. The skin over the swelling was of normal color and the veins were not distended. The swelling was uniformly smooth and tense and gave the impression of a sac distended with fluid. There was no roughness over the palpable bony surfaces of the orbit and no thrill or pulsation was conveyed to the examining finger.

Judging the case to be one of mucocele of the frontal and adjoining sinuses, the patient was admitted to the Howard Hospital and Drs. George B. Wood and W. F. Manges asked to study the case. Their reports are appended.

Rhinological Examination.

Dr. George B. Wood—"Occupying the region of the left frontal sinus there is a large cystic tumor which has apparently destroyed the frontal orbital walls of the sinus, projecting downward, displacing the eyeball. The left nasal fossa is free, although in the region of the agger nasi the lateral wall seems to be more prominent than is usually found. There is no pus or excessive congestion; the nasal septum is slightly displaced to the left side. Transillumination of the antra gives negative data, but the light did not penetrate the cystic tumor. The shadow of the tumor is distinctly outlined just above the infraorbital ridge. Diagnosis—Mucocele of the frontal sinus."

X-Ray Examination.

Dr. W. F. Manges—"The lesion involving the left orbit and frontal region has its origin in the left frontal sinus and is, I think, beyond question a mucocele. The supraorbital ridge is completely absorbed and the sinus is enlarged upwards on the frontal bone, as well as laterally. The edges, however, are all smooth and free from any infectious process or of growth involving the bone. A plate made in the extreme frontal sinus position has the appearance that the left orbit and the greatly enlarged frontal sinus are one continuous structure without an intervening wall. I am inclined to believe that the bone is destroyed, or rather absorbed, because of a constant pressure."

With the diagnosis of mucocele confirmed by the rhinological and X-ray examinations, a radical operation for the relief of the condition was decided upon and the patient properly prepared for the procedure.

Operating with the assistance of Dr. Wood, who at all times took the lead and performed the various steps in the operation when conditions arose which belonged more to the province of the rhinologist than the ophthalmologist, an incision was made from the inner angle of the orbit, curving under the brow to a corresponding point at the outer canthus. A second incision was also made which began about 15 mm. above the supraorbital notch and extended externally in a downward and outward curve, until it joined the termination of the first incision at the outer canthus. This second incision was necessary to permit the elevation of a flap sufficiently large to allow free dissection of the sac, which had been exposed by the first incision. As had been surmised, the sac, whose walls were found to be composed of thickened periosteum, was filled with the contents of the greatly enlarged frontal sinus, the bone comprising the anterior wall and floor of the orbit having been entirely eroded away by the pressure which the slowly distending sinus had exerted upon it. With the escape of the fluid from this cavity, the distended ethmoidal cells came into view. These were thoroughly evacuated and a large opening obtained into the nose. In freeing the superior walls of the sac, great care was necessary, as it was found that the bone in that position had been almost entirely eroded away and that the cavity

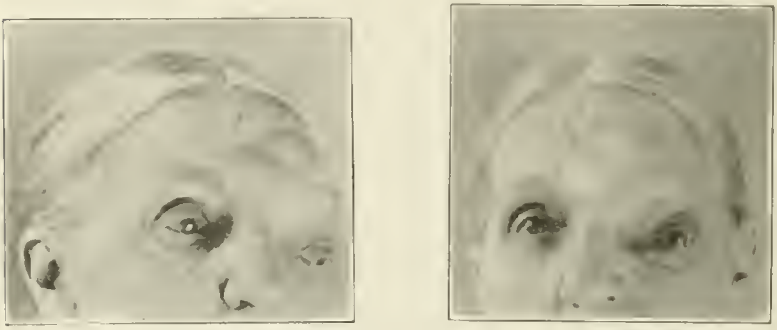


Fig. 1. Before Mucocele Operation.

of the orbit was separated from that of the brain by periosteum only. Tenon's capsule, with its ocular contents, was uninjured by the dissection. Following the evacuation of the fluid, the lining sinus membrane was removed as far as possible and curetted from the posterior sinus wall. The mucocele of the ethmoidal cells was also curetted and a large opening made down to the anterior fossa, sufficiently large to permit the passage of the finger into the nose. The wound was then closed, except at the inner canthus, where an aperture was left sufficiently large to permit of the loose packing of the wound. The orifice of the ethmoidal cells into the nose was kept patulous by a nasal packing. Healing was prompt and without incident. Even at the first dressing the eye was found to have receded at least a centimeter and the ocular movements had greatly increased in range.

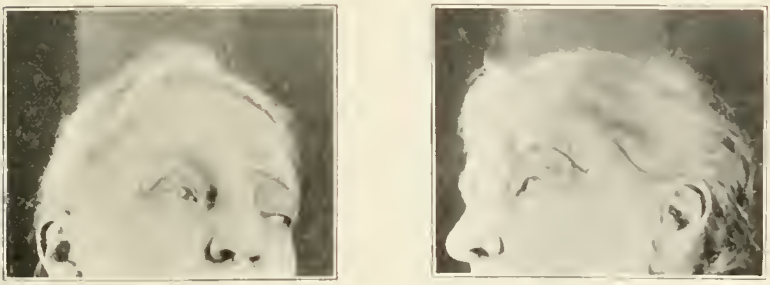


Fig. 2. After Mucocele Operation.

As may be noted by the second series of photographs, which were taken two weeks after the operation, the wound is entirely closed and in place of the marked prominence over the brow, there is now a pronounced depression. This, however, is rapidly growing less, as the cavity is filling in with new tissue. The excursions of the eye are now practically normal and it is interesting to note that the function of the levator has been practically restored. Uncorrected vision equals 5/7.5 in each eye and both fields of vision are normal. There is a hyperphoria of 20°. Dr. Wood reports good drainage from the affected cells into the nose, the anterior ethmoidal cells having been opened after the method of Mosher about a week after the primary operation and the anterior end of the middle turbinal amputated some days later.

THE TECHNIQUE OF IRIDECTOMY, AND ITS PERFORMANCE AS A PRELIMINARY TO CATARACT EXTRACTION. A CLINICAL NOTE.

BY

PRIESTLEY SMITH, F. R. C. S.

BIRMINGHAM, ENGLAND.

[In doing iridectomy, I have for many years past advocated almost exactly the simple but, as I have regarded them, important rules laid down by Mr. Priestley Smith and Mr. Maddox. I, consequently, have no apology to offer for the publication of the following correspondence. I may, however, add that by preference I introduce the point of the rather narrow keratome well away from the sclerocorneal junction; indeed, as far back as is consistent with reaching the scleroiridian angle and entering the anterior chamber with accuracy. When the opening into the chamber is made in this fashion there is little or no danger of subsequent incarceration of the iris; and the external wound, being conjunctival or subconjunctival, heals promptly; the anterior chamber reforms within an hour or two and the reaction is of the slightest.

After the scleral incision is made in the manner described by Mr. Priestley Smith and as the keratome is being withdrawn the point of the latter is pressed against the posterior lip of the wound. If the latter manoeuver be deftly executed, part of the iris (including its pupillary margin) will present in the opening. It is then easy, *without putting any instrument into the anterior chamber,* to grasp the protruding membrane and excise it, as about to be described.—Casey Wood.]

Mr. Priestley Smith to Dr. Maddox.

Thank you for your letter about Preliminary Iridectomy. I have written the enclosed in pursuance of your suggestion. Will you look through it and if you think well send it on to Dr. Casey Wood. The use of the lighted candle as a fixation-object is, I am sure, very helpful. Snellen, Senior, adopted it as his regular practice after seeing it used here. He worked by daylight but blackened the walls of his operating room so that the candle might be visible against a dark background.

Mr. Priestley Smith to Dr. Casey Wood.

At the suggestion of Dr. Maddox I send you a few lines on Preliminary Iridectomy. He quoted a remark of mine in his recent paper on "The Choice of a Cataract Operation," (OPHTHALMIC REVIEW, October 1914). I agree with him on this matter in all respects.

I hold that if a Preliminary Iridectomy increases the number of our successes by 1 per cent we ought to do it, because the one patient who does badly for want of it is not consoled by learning that the other 99 did well without it. But I think, for myself at least, the actual advantage is much greater than 1 per cent. I cannot prove it by statistics. I judge by the easy smooth routine and one's freedom from anxiety.

When I adopted this as my routine method I was a junior, and patients often said—"But why two operations, Mr. — does it all at once?" I replied: "I do it in two stages because I *think* there is less risk, and I feel more confident of getting a good result." This was generally enough. The essential thing is, as in all matters of the kind among sensible people, to make sure beforehand that they understand what you are going to do. Reasonable explanation seems to me half the battle in such matters. A surgeon who has not time to explain that there will be two states, and that the first is merely to *prepare the eye* and *not to restore the sight*, should not do a preliminary iridectomy.

As regards the shape of the incision, I agree with Dr. Maddox. Many years ago Weiss made for me a parallel-sided keratome, 4 mm. broad (No. 119 in his catalogue). Perhaps it is a little too broad. I generally preferred one which had been a little narrowed and a little shortened by re-grinding. I generally turned it a little sideways in coming out so as to enlarge the inner opening. I almost always used the Tyrrel iris hook—bent at an angle like the keratome, not too fine a pattern, and blunt—instead of iris forceps. The hook gives no pain, and if there is a momentary pain when the scissors close, a movement on the patient's part is of no consequence for the iris is already severed. The forceps may give pain directly they seize the iris and if the patient moves before the latter is divided, the mischief may be done.

On one point, which I learned many years ago from Mules of Manchester, I set great store, i.e., holding the scissors transversely across the wound so that when they close they are over the vertical meridian of the cornea. Cutting in this manner the scissors as they close draw the iris away from the angles of the wound and the use of a repositor is rarely needed. Holding the scissors parallel with the wound is much more likely to leave the iris nipped in the angles.

For this operation I always stood square at the side of the patient—on his right side for either eye—with the keratome in the left hand and the fixation forceps in the right, while making the incision; the hook in the left hand and the scissors in the right while drawing out and cutting off the iris. During the latter step fixation by forceps was rarely needed. The room was darkened a little; a lighted candle held by a nurse was used as a fixation object, and brought the eye exactly and steadily into the desired position, even when it was only dimly discerned.

An assistant standing on the other side of the patient lighted the field of operation by means of a small hand lamp—candle or electric—a better illumination, I think, than varying daylight. Using artificial light in this way I was in the habit of operating on patients in their beds instead of on a special table,—I think to their great satisfaction,—when no anaesthetic was required.

Additional Note by Dr. Maddox.

I am not sure that I made my meaning quite clear about preliminary iridectomy. It is not only a small one that I make, but an *inversion of the wound* so as to be larger inside the eye than outside and leave the minimal incision in the conjunctiva, so as not to embarrass the cutting of a conjunctival flap later. To accomplish this result the keratome, 2 millimetres broad, is turned first to one side (on entry) and then to the other (on withdrawal) without enlarging the conjunctival aperture.

COFFEE AMBLYOPIA AND ITS RELATIONS TO GENERAL INTOXICATION FROM ROASTED COFFEE PRODUCTS.

BY

CASEY A. WOOD, M. D.

CHICAGO.

In an early monograph (*The Toxic Amblyopias; Their Symptoms, Varieties, Pathology and Treatment,* 1892), the writer spoke of the probability that excessive coffee drinking may occasionally be productive of eye symptoms and that strong solutions of caffein and its salts applied to the cornea act as a weak mydriatic and anesthetic; also that Hutchinson (*Centralbl. für pkt. Augenh.*, 1887, p. 240.) refers to a case of caffein amblyopia, the symptoms of which resembled those of the amblyopia associated with quinin intoxication.

Since the foregoing statements were made a number of clinical and other observations deepen the conviction that coffee amblyopia is a pathological verity. For example de Schweinitz (*Toxic Amblyopias,* 1896, p. 176) remarked that "the older writers—for example, Beer and Himly—refer to the misuse of coffee as a probable cause of amaurosis, the latter author describing it with the list of substances which he believes produce loss of vision by paralysis of the nervous force of the retina. These references in the earlier and pre-ophthalmoscopic days are always exceedingly indefinite, but there is some evidence, vaguely hinted at here and there by more modern authors, that the abuse of coffee may cause disturbances of sight. It has a slight mydriatic effect."

Lewin and Guillery (*Die Wirkungen von Arzneimitteln und Giften auf das Auge,* Vol. 1, p. 447) believe that coffee taken in excess, may produce a number of functional disturbances of the eyesight. They agree that tea drinking produces similar symptoms, and perhaps more frequently than coffee. Phosphenes accompanied by amblyopia are, according to them, noted in both coffee and tea amblyopia. They also think that the destructive distillates of organic matter involved in coffee roasting are responsible for at least some of the symptoms.

Wing (*Annals of Ophthalmology,* Vol. 12, p. 232) has reported a fairly definite instance of this intoxication, resembling the case cited by Hutchinson. Red-green blindness and metamorphopsia were both noticed as a result of excessive coffee drinking.

Just as the retrobulbar neuritis of tobacco-alcohol has probably close affiliations not only in a clinical but in a pathologico-anatomical sense with the alcoholic neuritis affecting the mixed nerves, so may the suspicion arise of similar relations between changes (if there are such) due to nerve involvements in coffee intoxication. In other words, if the excessive drinking of coffee produce a mixed-nerve neuritis why not a similar affection of the optic nerve or of one or more branches of the other nerves supplied to the ocular apparatus? Dr. L. Harrison Mettler, Professor of Neurology in the University of Illinois has very kindly given the writer the following notes of a case of *polyneuritis from coffee intoxication.* It may be regarded as of importance in throwing light upon this obscure problem in ophthalmology. Dr. Mettler regrets that no more definite examination was made of the ocular fundus, visual fields and central vision. However, the defective eyesight became entirely normal after complete abstinence from the deleterious beverage and treatment with nervine tonics.

Mrs. E. S., age 53; husband well and living; one daughter well, but nervous. No miscarriages. Operated on for uterine fibroid, four years ago. This brought on menopause. Menstruation every three weeks, profuse. Bowels in good condition. No family history, except of a brother who is in *asylum from sunstroke.* Had gall stones, twenty years ago. Father died of heart disease. Mother cystic tumor of the pelvis. Scarlatina; diphtheria; pertussis; typhoid many years ago. No rheumatism. Itching (last few years) starting in toes and up to knees.

Last June began having numbness in toes; gradually ascended to the knees, and now reaches hips. Began in tips of fingers about the same time and went up to elbow in left arm and about the wrist in right arm. Left arm pains, a dull ache all the time; also at night No marked effect in wet weather. Weakness in legs and in hand; and can't pick up or move a chair; has much backache of a dull character. No headache.

Eyesight poor for last four years. Not clear vision. Amblyopia. No trouble walking in dark room. No vertigo. Never unconscious. Hearing dull, but no tinnitus aurium. Speech troubled; stammers and repeats sometimes; noticed about a month. Smell and taste natural. No diplopia. No vomiting but once. Memory somewhat affected. Not emotional. No *globus hystericus.* No clavus. At times passes large quantity of urine. *Excessive coffee drinker, 16 to 18 cups a day. Painful muscles.* Dyn. in hands 60. *Diminished reflexes.* No clonus. No Babinski. No nystagmus. No intentional tremor. Palpitation of heart and shortness of breath. Partial wrist drop, but no reason to suspect lead poisoning from coffee pot or other sources examined.

Diagnosis: Polyneuritis from excessive coffee drinking.

Treatment: Strychnia in gr. 1-30 doses; rest.

Above diagnosis made upon the history of the case and the symptoms, especially quadriplegial numbness and paresis, muscular tenderness, diminished reflexes and careful differentiation from other conditions remotely resembling the above picture in some respects, as tabes, insular sclerosis, etc. Favorable prognosis was given upon cessation of coffee.

Results: Complete recovery from all symptoms, as recently reported by family physician.

ANOTHER CASE OF MIXED IRREGULAR ASTIGMATISM FOLLOWING INJURY.

BY

ROBERT SCOTT LAMB, M. D.

WASHINGTON, D. C.

Several years ago I reported such a case, of unusual, interest, because of simultaneous loss of the other eye.

This report of another case is undertaken with the idea of making a plea for more conservative treatment of injured eyes.

Previous History.

On Sept. 23, 1911, C. T. M., aged 24. bank clerk, came to my office wearing a + 1.50 sph. right eye and + 6 = + 3. c. ax. 90° in left; complained of intense pain in sunlight and when using eyes under artificial light; there was no hyperphoria, but exophoria for near and distance; also amblyopia ex anopsia left eye.

Present History.

On March 7, 1914 about 6 p. m., upon leaving the bank, which is situated a short distance from city proper, there being snow on the ground, he, with several of his companions got to snowballing one another, and by accident—with the head partly turned, a snowball struck the right eye glass and eye—a piece of glass cutting eyeball, also lid. He was seen by his family physician soon after this, who, knowing that he had been a patient of mine, called me, but failing to reach me in the evening, called my friend and colleague, Dr. E. G. Seibert, who had patient sent to hospital and ordered atropin and constant ice applications. When seen by me in consultation on morning of March 8th there was a wound of the upper lid of the right eye, superficial in character, also a lacerated wound of cornea and sclera—the iris protruding into the wound—pupil irregular—with some question as to whether lens or ciliary body had been injured. There was a large abrasion of cornea above the line of the penetrating wound which extended from 4 mm. to the nasal side of the limbus across the cornea to the temporal side of the limbus about 2 or 3 mm. below the horizontal meridian, with right angle cuts at two points—both in the cornea; one slightly at the temporal side of the limbus, the other at the nasal side of the temporal limbus, so that the lower portion of the cornea could be turned down very much as a flap. Close inspection could elicit no evidence of glass within the eyeball, and the presumption was that the piece of glass which had cut the cornea had been pushed away from the eyeball by the closure of the upper lid, as the orbicularis palpebrarum involuntarily contracted just a little too late to prevent the glass from striking the eyeball. The ice applications of bichloride of mercury were continued as well as the atropin; bichloride salve was also introduced into the cul-de-sac for cleanliness, asepsis and soothing effect. At the end of 24 hours the bichloride ice applications were changed to warm applications of bichloride for ten minutes every three hours and the case was seen about twice a day.

At the end of five days, it being apparent that the iris, which was protruding, would not re-enter the now reforming chamber, the hernia was abscised, and that portion of the wound covered by the conjunctiva and episclera, which was elevated for this purpose—two stitches sufficing to hold the wound together; these were removed in four days—the other treatment continued as before, atropin and bichloride salve together with hot applications. The general health, meanwhile, had been cared for; tinct. of chlo. iron and gly. in equal parts, of which 30 drops administered in water every 3 hrs. was given internally; also aspirin, 5 grs. together with hexamethylenamine 5 grs. every 4 hrs.

At the end of two weeks patient left the hospital in fairly good physical condition and with sufficient sight to get around. He was advised, however, not to attempt any work for awhile and he continued under observation for two weeks longer. On April 10th, he was examined for a glass for the right eye. Ophthalmometric picture was as if a spider was traveling over the cornea and various points of irregularity of the cornea were so marked as to make the mires appear as illuminated spider legs. By means of a stenopaic slit it was found that with a + 0.38 cyl. 85° combined with — 1.25 cyl. 35° he was enabled to read 6/8-1/2 and J. 9. A week later he was able to read 6/4 with same glass and J. 1. Since May 1st, 1914, he has been at work almost continuously—even doing night work—yet there has been no sign of any trouble with the eye during this period. I have had him under observation, seeing him once every week or two weeks, during the entire time.

Frankly, how many operators would have tried to save an eye, injured as I have described above, so long as the other eye *appeared* normal? Had I not known the left eye to be amblyopic, would I have been *so* ultra conservative? The proof of the pudding is in the eating thereof. The case in point seems easily to prove the justice of my plea for conservation, without prolonged argument.

Many of you who read this plea may believe as I do, that, in the hurry of our busy lives, injured eyes are not always given the benefit of a doubt, and so join with me in an effort to obtain and maintain a mental attitude of marked conservatism in the treatment of injured eyes.

HYDROPHTHALMOS FOLLOWING TRAUMA. REPORT OF CASE.

BY
HUNTER H. McGUIRE, M. D.
WINCHESTER, VA.

A vast majority of writers, in describing this rather rare condition, synonymously spoken of as buphthalmos, keratoglobus and infantile glaucoma, create the impression that the disease is entirely congenital in origin and a careful research into the literature fails to bring to light much evidence that trauma might be regarded as an exciting cause of the condition. One author, however, does refer to the fact that the disease may be acquired and has been known to follow ophthalmia neonatorum and another authority reports a case in which keratoglobus was a late development after a penetrating wound of the cornea with prolapse of the iris, but these are the only instances in which reference is made to an acquired form of the disease.

The following case, which occurred in the practice of the writer, is interesting from the fact that there was no antecedent history of eye trouble and that the enlargement of the globe was entirely dependent on the injury.

J. B.—A boy, four years of age, was referred to the writer in May, 1911. On the day previous to his visit the lad, a well developed specimen of childhood with no previous history of eye trouble, was accidentally struck in the right eye by the pointed end of a piece of steel wire. Objective symptoms revealed a perforating wound of the cornea with rupture of the anterior capsule of the lens and a beginning traumatic cataract. The iris was uninjured, the anterior chamber completely restored, and the corneal wound showed no signs of infection. Little inflammatory reaction followed the trauma and there was no increased tension. The usual treatment was ordered and the patient kept under close observation.

For a few weeks following the injury the cataract developed the usual changes, the opacity gradually extending throughout the entire lens with some swelling of its substance. Complete mydriasis was maintained by atropine and no secondary iritis from pressure developed. In a comparatively short period the cataract began to show signs of absorption and by the end of six months clear areas could be detected in the lens. Up to this stage the patient suffered no pain, the eye showed little evidence of inflammatory reaction, and the tension was normal.

About this time it became apparent that the corneal diameters were increasing and there was a slow but progressive enlargement of the globe, with some increase in tension. Despite the fact that the cornea was gradually enlarging, it retained its transparency and showed no steaminess from the increased intraocular pressure. After a few months the anterior chamber became deepened, the iris atrophic and tremulous, and the eye large and protruding enough to constitute a deformity. A view of the fundus was not obtainable on account of incomplete absorption of the lens. Throughout the development of the disease the patient suffered no inconvenience and the eye was decidedly free from congestion.

The patient then passed from observation and, after a period, the parents becoming alarmed at the enormously increasing size of the eye, consulted Dr. Harry Friedenwald of Baltimore, who has kindly furnished me the following history:

"John Barnett, aged six, was first seen in my service at the Baltimore Eye, Ear & Throat Charity Hospital on October 28, 1913. His right eye had been injured two years previously by having been struck by a piece of wire. There was an irregular scar in the right cornea, traumatic cataract and adhesion of the iris in the corneal scar. There was also secondary glaucoma, the tonometric measurement being between 43 and 44. The eyeball appeared to be slightly enlarged. Light perception was doubtful. On October 31, 1913, tonometric measurements showed pressure of 54.

"On November 3. 1913, an iridectomy was performed by my assistant, Dr. H. K. Fleckenstein, making a large opening in the iris and the tension subsequently appeared normal. He was discharged from the hospital on November 4th.

"In the middle of December he was seen again and it was found that the tension had again risen, and the eye showed further evidence of stretching. On the 19th of December an Elliot trephine operation was performed by me. The immediate result of the operation was very gratifying and the patient was discharged on December 28th."

Nothing further was heard from the case until December, 1914, when the patient was again brought to the writer. The eye was then exceedingly painful, the sclera thinned, bluish in color, and containing a hernia of the chorioid on the site of the former sclerotomy, the cornea cloudy and possibly a third larger than normal, and the globe enormously enlarged and protruding. Enucleation was advised and the eye removed the following day.

The specimen showed a globe much enlarged in all diameters, the principal elongation being in its antero-posterior diameter, with a large globular cornea and a greatly attenuated sclera. A section of the eye revealed a fluid vitreous secondary, no doubt, to an existing chorio-retinitis. Unforfortunately, the specimen was lost before the writer had an opportunity to accurately record the great increase in the dimensions of the eye.

TONGUING THE EYE FOR FOREIGN BODIES—THE CAUSE; PNEUMOCOCCUS ULCERATION OF THE CORNEA—THE EFFECT.

BY

H. V. WÜRDEMANN, M. D.

SEATTLE, WASHINGTON.

"A survival of a filthy and pernicious custom is indicated in a recent letter to the medical editor of a newspaper asking whether it is safe to remove a cinder from a friend's eye by applying the tongue to the eye. We have not outgrown these customs, evidently, though we live in a community where ordinary cleanliness is supposed to be in vogue."

The above quotation, OPHTHALMIC RECORD, December 1914, is the excuse for the following report, which however may be otherwise esteemed to be of a certain clinical interest.

C. M., aged 35, of Cordova, Alaska, had a foreign body blown into left eye, January 15th, 1913. A few hours later, his wife applied her tongue to his eye. It remained irritated until the time he arrived in Seattle for consultation with me, March 29th, 1913. I then found a superficial ulcerative keratitis. About one-third of the lower part of the cornea stained to fluorescein. The predominant germs discovered on smears at this time and on various occasions thereafter were the *pneumococcus* of Fraenckel-Weichselbaum and the *diplobacillus* of Morax-Axenfeld.

The treatment from this date until May 2nd, 1913, was atropine and zinc drops, bichloride and chinosol washes, hot compresses; slow healing. Following this up to June 18th, hexamethylenamine and ten injections of pneumococcus serum. On this date, the ulcer no longer stained and June 24th he returned to Alaska.

He was seen again December 29th, 1913, when there was small diffuse macula of the cornea.

March the 17th, 1913, he brought his wife to me on account of pain and swelling in the left eye which was due to sub-acute ethmoiditis; treated by resection of the left middle turbinal and curettement. The predominant micro-organisms in the discharge were the pneumococcus and the staphylococcus albus. Her tongue was a picture of the "Geographical Tongue," seamed and enlarged. She said it had been sore for several years. Her teeth were in good shape. There was no evidence of any other disease, general or local. Tincture of iodine and 5% chinosol solution as a mouth wash gave some relief, but smears from the tongue up to the time these people left for Alaska, always showed the pneumococcus.

I had not at that time, ethylhydrocuprein which has apparently proven to be a specific for local lesions produced by the pneumococcus.

A report upon this medicament is reserved for another article.

ELECTROLYSIS IN THE TREATMENT OF TRACHOMA AND ITS SEQUELAE.

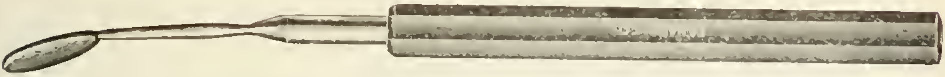
BY

EDGAR J. GEORGE, M.D., F.A.C.S.,
CHICAGO.

It is not the intention to enter into a dissertation concerning the etiology and pathology of trachoma, but only its treatment. The disease in itself is of increasing prevalence in some localities and with certain people, consequently every possible effort is being put forth to combat its contagiousness by the strictest vigilance, prophylaxis and treatment. The disease is characteristically chronic and regardless of the most carefully carried out treatment it frequently drags on for months and years, carrying with it its contagion. It is also not the intention to reiterate or comment on the innumerable methods of treatment in vogue, although it may be said that many have proved curative, but so severe that they have destroyed the palpebral conjunctiva, resulting in cicatricial contractions that were even worse than from the disease itself. Owing to its chronicity and lack of responsiveness to medication, the treatment of the disease has been discouraging to the physician, so much so that heroic methods seemed warranted and have been resorted to in an effort to effect a cure. As stated before, the methods of treatment are innumerable, certain methods being successful in the hands of some and not with others. No regular line of treatment has been accepted by all.

The object of this article is to call the attention of the profession to the use of electrolysis in the treatment of trachoma.

The use of electrolysis is a treatment which was recommended by Dr. Neiswanger some eighteen years ago in his work on electro-therapeutics in which he states that although not directing his attention particularly to diseases of the eye, he believes he was the first to call attention to the treatment of this intractable disease by metallic cataphoresis. He gave several treatments with marked benefit to a physician from Kansas, attending a course at the Post-Graduate School, who was suffering from an aggravated case of trachoma of many years' standing.



I adopted his method at the time and have used it ever since, both in my clinical and private practice, with most gratifying results. Up to the present time there seems to have been no mention in ophthalmic literature of the treatment by others. The technique is practically the same as Dr. Neiswanger has described, with some slight variations.

I use a specially devised copper electrode with a smooth flattened olive-shaped tip that will glide smoothly over the surface of the conjunctiva without causing irritation. Preceding a treatment an adrenalin chloride 1/1000 solution is first instilled into the eyes, followed by a 5 per cent solution of cocaine. After anesthesia has taken place the copper electrode is attached to the positive pole of the galvanic battery, the negative pole is placed and held in the patient's hand, the upper lid is everted and the olive-shaped tip of the copper electrode is inserted beneath the lid up into the superior fornix. A current of five milliamperes is gradually turned on by an assistant and held at that point, while the operator applies the electrode to the under surface of the upper lid, which is held everted with the thumb of the left hand. A slight movement is constantly kept up in order to prevent the electrode from sticking. The application is made gradually to the full length of the under surface of the everted upper lid and fornix, thereby reaching every part of the conjunctiva, as the whole surface must be thoroughly covered. Each treatment requires a seance of from three to five minutes, after which the current is closed off and the electrode is transferred to the exposed conjunctiva of the lid, which is then treated in like manner. The same treatment is applied to the lower fornix and lid, which is easier as the conjunctiva can be readily exposed by drawing down the lower lid. Treatments naturally cause considerable pain and lachrymation, more especially as the hypertrophied conjunctiva approaches a reduction to normal, but it is of short duration. During the treatment the discoloration of the lachrymal fluid to a milky hue is quite noteworthy. After the treatment adrenalin, cocaine and cold applications will relieve the pain, and from one to two treatments a week will in time effect a cure. It is also noteworthy that when a cure is effected there is a complete restoration of the conjunctiva to normal without cicatricial involvement in cases of not long standing or those that have not been previously treated by caustics.

Dr. Neiswanger says: "Therapeutically all metals are cathions, that is, they have an affinity for the negative pole, and the copper electrode being attached to the positive pole the metal is disintegrated and travels in a *minutely subdivided* shower of *pure metallic copper* toward the negative pole for which it has an affinity. Being minutely subdivided, it readily combines with the body fluids to form a chloride or oxychloride of the metal. It is not, however, taken into the tissues as oxychyloride of copper, as claimed by some writers, because both oxygen and chlorine are anions and never leave the positive pole."

The worst cases of trachoma have responded to this treatment. One case in particular where the trachomatous bodies had invaded the ocular conjunctiva to the cornea of both eyes on the nasal and temporal sides that had resisted previous treatment.

Galvanization is also effective in treating the disease after it has passed into the cicatricial stage, either after the disease has exhausted itself or after scarification, expression or caustic treatment. Conjunctival cicatricial tissue has a marked contracting influence on the lids, their contour is disturbed, the margins are shortened, entropion results to a greater or less degree, and in marked cases there is trichiasis. Such conditions cause corneal irritation, opacities and visual disturbances.

Many operations have been performed for the relief of entropion and trichiasis with variable degrees of success. Some have proven detrimental on account of the after-effect of a more pronounced scar tissue than before.

After the disease has passed into the cicatricial stage, negative galvanism will be found most beneficial. It will soften and dissolve cicatricial tissue, lessen contraction, thereby lengthening the margin of the lids, and relieve the ever persistent hoe-like scraping on the cornea.

For this treatment the same electrode is used as for trachoma, only it is to be attached to the negative pole. It is applied and carried over the conjunctival surface of the lids in the same manner as the treatment for trachoma, with the exception that more time is directed to the center of the lids and their margins, as cicatricial bands will be found to be more dense at these points. The treatment will require about the same length of time and the same number of milliamperes as for the treatment of trachoma.

As for trichiasis, each inverted cilia should be carefully sought out with a magnifying glass and its follicle destroyed with an electric needle. A fine cambric needle will answer the purpose nicely. The needle should be secured in a needle holder attached to the negative pole. The needle is inserted along the shaft of the cilia deeply into the follicle and one milliampere of current turned on. The needle must be held in position until one feels certain that the follicle has been destroyed, which may be from one to two minutes, after which the needle is withdrawn and the cilia taken hold of with forceps and gentle traction made. If the cilia slips out easily, the follicle has been destroyed, but if resistance is felt the needle must be reinserted and the same procedure repeated until it does. Some patients cannot endure having more than four to six cilia removed at a sitting. The treatment requires time and patience on the part of the physician and patient.

110 North Wabash avenue.

A CASE OF COMPLETE BILATERAL IRIDIREMIA IN A CHILD WHOSE FATHER HAS BILATERAL COLOBOMA OF THE IRIS.

BY

ARCHIBALD CARY LEWIS, M. D.,

MEMPHIS, TENN.

The following case was referred to me on September 24, 1914, by Dr. M. L. Bearden and owing to the rarity of such conditions it was presented before the Memphis and Shelby County Medical Society in October. None of the members present had seen a case of this kind.

Baby Q., boy, age 11 months, normal in size, weight and strength. Free from all physical defects except ocular ones. Bright and cheerful in disposition.

Eyes appear normal in size, shape and position, but close examination shows no trace of iris tissue visible in either eye. The margins of the lenses are plainly visible in any light with the naked eye, while the lens substance is perfectly transparent throughout.

The ophthalmoscope shows the media absolutely clear and free from opacities, while the disks, retinæ, choroids and blood vessels are quite normal in appearance.

Vision is evidently greatly reduced and considerable photophobia is manifested in bright solar light. The child likes to look at bright electric lights, however, and is much more observant in the late afternoon or in a dimly lighted room.

Mr. Q., the child's father, age 31, shows an interesting ocular condition forcibly demonstrating the effect of heredity in iridiremia. He has a bilateral coloboma of the iris, the whole nasal side of each iris, about 2/5 of it being absent. This is a very unusual variety of congenital coloboma, for according to Fuchs, "Congenital coloboma of the iris is always situated below. The pupil is continued downward to the margin of the cornea, growing narrower all the time, so that it has the shape of a pear, with its small end at the lower margin of the cornea."

The family history may be considered negative except for a possible suggestion of lues in the paternal grandparents of the child.

While Mr. Q. is sure that the eyes of his parents and grandparents were normal, he reports the loss of six brothers and sisters in infancy, all dying between the age of a few weeks and one year. Only one lived to be a year old: it died with pneumonia; the other five lived only a few days or weeks and died of unknown causes. Four of these were older and two younger than himself. He has four normal brothers and sisters living younger than himself.

Refraction gives: O. D. + 1.00 cyl. axis 90 = 20/20. O. S. — 6.00 sph. = Fingers at 10 ft. Numerous dense opacities are seen in the left lens, but the fundus can be dimly seen with the ophthalmoscope. He believes that his vision has improved since childhood.

Davenport, in his "Heredity in Relation to Eugenics," expresses his views as follows:

"No female with the coloboma defect should have children, since all sons will be defective in the structure of the pupil. For males with such a defect the danger in marriage is also great, for either all or half of the sons of such a father, although married to a woman of a normal strain, will be defective, but the daughters will not be defective in this respect unless the wife belongs to a strain with this defect. Two normal persons may marry with impunity, except that if the woman belongs to the abnormal strain it may be that half of her sons will be affected."

To further substantiate the observations of Davenport, it would be very interesting to examine the eyes of future children born to the parents of this child with aniridia, and see the ocular defects of the males and the normal eyes of the females. Notwithstanding this fact, I felt it my duty to discourage more offspring unless they had sex control so well in hand that they could guarantee female children only.

Exchange Building.

The last number of the Annali di Ottalmologia announces the death on December 30, 1914, of Prof. Luigi Guaita, one of the editors of that Journal and well known as a distinguished opthalmologist and writer on ophthalmic subjects. He was director of the Ophthalmic Hospital in Florence where he died.

THE GREEN ELEVATING EYE SPECULUM.

BY

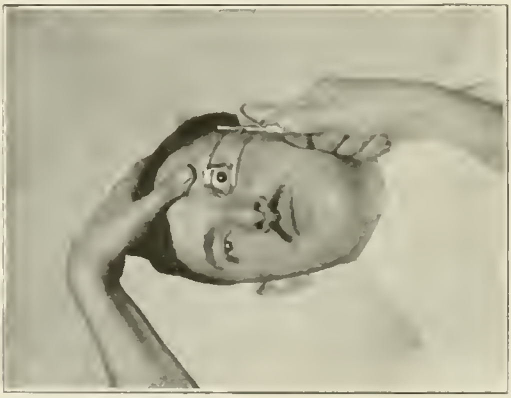
A. S. GREEN, M. D.

AND

L. D. GREEN, M. D.

SAN FRANCISCO.

This photograph shows the speculum in position, giving an ample and safe exposure of the field of operation. For a detailed description see the OPHTHALMIC RECORD, February, 1915.



New Eye Speculum of A. S. and L. D. Green.

THE REPORT OF AN UNUSUAL ACCIDENT WHICH CAUSED THE LOSS OF AN EYE.

BY

CHARLES W. KOLLOCK, M. D., F. A. C. S.

CHARLESTON, S. C.

A man was shooting with a pistol at a bell which hung in a tree about thirty paces from where he stood and between twenty and thirty feet from the ground. The ball struck the bell, glanced and returned in the line it was fired and entered the right eye with which he had aimed the pistol. The eye was of course destroyed and the ball when removed had been flattened to about the size of a nickel five-cent piece which it resembled when seen from a distance. The side which came in contact with the bell was easily distinguished by the marking made as it glanced over the surface of the bell. The return of the ball in the line of first flight can only be explained by the assumption that it struck the inner surface of the farther side of the bell, glanced around the inside and following the curve of the side nearer the man was returned in the line it was fired.

The Buffalo Optical Co., Buffalo, N. Y., has gone a long way toward establishing the ideal relation of ophthalmologist to optician. The following are extracts from their advertising matter which presents a series of "Eye Talks." These "Talks" are signed Peter H. Meyer, presumably the proprietor of the company.

"This first 'talk' of the series is to emphasize a truth that if fully understood by all would prevent endless eye trouble.

"It's this—an optician is NOT an Oculist.

"An Oculist is a physician who specializes in the treatment of the eye. He does not sell glasses.

"While the skilled optician is the highly trained mechanic whose business it is to carry out in every particular the directions of the Oculist who prescribes.

"Your eyes are altogether too precious for you to take chances with them. Be sure of proper treatment by going to an Oculist.

"And then—if he orders glasses for you—see that they are made and fitted by a skilled optician."

"The word 'Free' is about the most abused word in the English language.

"Every day you see things offered free that aren't free at all.

"And this applies quite as much to eye examination as to many other things you can call to mind.

"When you consult an Oculist—an eye specialist—he makes a proper charge for his service. You get unbiased advice. He has no glasses to sell you.

"So if your eyes seem to require treatment, consult an Oculist, and *if he orders glasses* take the prescription to an optician who is thoroughly reliable, dependable and skillful."

REPORTS OF SOCIETIES

WILLS HOSPITAL OPHTHALMIC SOCIETY.

DR. S. LEWIS ZIEGLER, *Chairman.*

OCTOBER 5, 1914.

Gonnorrheal Ophthalmia.

Dr. S. D. Risley exhibited a patient convalescing from a violent attack of gonorrheal ophthalmia, which he said was the only case occurring in his service for many years. The patient had first applied with a catarrhal conjunctivitis, which simulated, because of the retrotarsal swelling and viscid discharge, the early, acute stage of trachoma; but laboratory study showed only streptococci and a few pneumococci. A thorough application of silver nitrate at the clinic, and an alkaline wash and zinc sulphate at home led to a speedy recovery.

A few days later the patient returned with swollen lids, a profuse purulent discharge and an edematous collar embedding the entire limbus of the cornea. He had severe pain. Laboratory study revealed an abundance of gonococci. He was admitted to the isolation ward and placed on continuous iced compresses, frequent thorough cleansing and strong solutions of silver nitrate to the everted lids and retrotarsal folds.

The pain continued. In forty-eight hours the cornea was infiltrated and the anterior chamber apparently filled with pus. The ball was hard, swollen and extremely tender to palpation. The cornea ruptured and a hopeless prognosis was given.

The conjunctival sac was then filled with a 10 per cent ointment of cassaripe, i. e., the expressed juice of the black cassava, the base of the West Indian pepper-pot used by the natives to preserve meat. The pain and suppuration subsided with great rapidity, the swelling of the lids disappeared, and convalescence was rapid. The site of the corneal rupture, to the nasal side of the pole, became closed, showing a contracting scar and adherent iris when the patient was exhibited by Dr. Risley. Elsewhere the anterior chamber was reformed. The ball was nearly free from injection, but discolored from the conjunctival infiltration. The man could count fingers readily. Such a recovery from what had appeared at one stage to be a hopeless condition was, in Dr. Risley's experience with gonorrheal ophthalmia, remarkable. For a study of the cassaripe ointment he referred to his paper presented to the American Ophthalmological Society in July, 1898.

Dr. John Turner asked Dr. Risley how long the ointment would keep.

Dr. Risley replied that if Dr. Turner would open the box he would find the salve in good condition.

Dr. William Zentmayer spoke of the uncertainty of laboratory diagnosis of gonococcal conjunctivitis, and said that the most competent bacteriologists acknowledge that they are not always able to make such a diagnosis. He then cited a case in a child on whom he had operated. Two days later there was a discharge from the conjunctival sac, and a collection of necrotic material about the field of operation, with some swelling of the lids. The discharge was grayish. It was not profuse, but free. From a smear of this discharge a laboratory diagnosis of gonococcal conjunctivitis was made. The next day the condition was worse, but not clinically characteristic. The case was sent to the Philadelphia General Hospital, where several examinations were made, yet the gonococcus was not discovered. This should not be considered an adverse criticism upon the laboratory in which the first examination was made, because Dr. Zentmayer knew of three instances in which such a diagnosis had been made, in none of which did the case prove to be gonococcal. These three examinations were made in three different laboratories. One of these patients had become perfectly well within forty-eight hours. Dr. Zentmayer said that he would defy anyone to distinguish the gonococcus from the staphylococcus morphologically, as pictured in Axenfeld's textbook. One, however, is Gram negative, and the other Gram positive.

Dr. William C. Posey asked Dr. Zentmayer whether he had considered the possibility of any of these cases having been metastatic, and said that one could find the gonococcus in smears from the eyes in such cases, even though they might run a moderate course.

Dr. Zentmayer replied that metastatic cases are usually bilateral, while infective cases are unilateral.

Dr. Risley stated that in his case it was improbable that the condition was metastatic, because it was confined to one eye. The patient had never had gonorrhea himself, but he ascribed the infection to the use of a contaminated towel.

Pulsating Exophthalmos.

Dr. William Campbell Posey exhibited a case of pulsating exophthalmos involving both eyes in a man sixty-six years of age. This condition had arisen after a fall upon the head, and was supposed to be associated with a fracture of the base of the skull, although an X-ray plate taken two years after the injury was negative. Vision began to fail shortly after the accident, and gradually decreased until that of the left eye was finally equal only to counting fingers at twelve inches, that of the right eye being 1/60. The ophthalmoscope revealed the visual diminution to be dependent upon a low-grade atrophy of both optic nerves. The retinal veins were still much distended and tortuous, but no signs of present or past neuritis could be seen when the case was exhibited. There were no hemorrhages. Both eyes were moderately proptosed, apparently in consequence of a distention of the orbital veins, for a mass of these vessels was easily palpable immediately under the orbital rim. This mass of vessels pulsated and conveyed a thrill to the examining finger. Both eyes were practically immobile. The right superior oblique, the right internal rectus, and possibly the inferior oblique and the left superior oblique, alone functionated. Dr. Posey said that the case had been referred to the Howard Hospital for neurological and surgical study, and that it was the intention of Dr. Edward Martin, the surgeon of that institution, to ligate the carotid.

Examination of the nervous system by Dr. John H. W. Rhein resulted as follows: There was no facial paralysis observable. The tongue was pushed slightly to the right. The finger-to-nose test showed marked hypermetry and dysmetry on both sides. Adiadochokinesis was present in the left arm and both legs. With his feet together, there was a tendency to sway and stagger backwards. Walking showed a side-stepping to the left. The knee-jerks were increased on both sides and were equal. Ankle-clonus and Babinski phenomena were both absent. There was no paralysis of the arms or legs. There was a marked irregular tremor of both hands. The symptoms were considered to indicate an involvement of the cerebellum, probably in the nature of a destructive lesion occasioned at the time of the fracture of the skull, two years previous.

Brain Tumor With Choked Disc.

Dr. Posey then showed a case of brain tumor with choked disc. This condition had arisen in a non-syphilitic man, thirty-one years of age, a pattern-maker by trade, three years previously, without apparent cause. Vision had begun to fail in the left eye four months previously; and in the right, two months later. Total blindness had ensued in both eyes several weeks before the patient came for examination.

Externally there was nothing unusual, except widely dilated pupils, the ocular movements being good, and there being no proptosis. Ophthalmoscopic examination revealed a high degree (5 to 6 D.) of papillitis in each eye, with dilatation of the blood-vessels, hemorrhages and extravasations. This case, too, had been referred to the Howard Hospital, and Dr. Posey said that it was Dr. Martin's intention to perform an immediate decompression operation.

Dr. J. H. K. Rhein, the neurologist at the Howard Hospital, reported the family history in this case negative, except that the patient's mother had had several still-born children and miscarriages. His previous history was also unimportant, aside from the fact that since his eleventh year he had had attacks that, from the description, appeared to have been petit mal. For the last six weeks he had had occipital headaches, associated with pain in the frontal and vertical region, vomiting in the morning, and vertigo, objective and subjective.

Upon examination, the following condition was found: The neck was stiff, offering some resistance to rotary movements; the right side of the mouth drooped when he made an effort to show his teeth, and the tongue was pushed slightly to the right. Slight hypalgesia was present on the right side of the face. There was no weakness of the arms or legs, no tremor and no adiadochokinesis. The right knee-jerk was slight and the left absent, but both were reinforcible. There was no clonus nor Babinski sign. Dr. Rhein thought that the symptoms pointed to a diagnosis of cerebello-pontine angle tumor, showing involvement of the fifth, seventh and twelfth cranial nerves.

Extensive Injury to Both Eyes From A Dynamite Explosion.

Dr. Posey exhibited a patient in whom the left eye had been torn entirely away, and the right so badly lacerated that vision was reduced to light-perception. When first seen, some weeks after the accident, the conjunctiva had covered the lower half of the cornea and was adherent to a dense scar, which extended across the cornea. The lens was cataractous. The eyeball was entirely exposed by a complete ectropion of the lower lid, the lid being folded back and held in its ectasic position by a broad fold of cicatricial tissue. Four operations were necessary. First, the lid was restored to its normal position by cutting away the adhesions and transplanting a broad pedicled flap from the forehead to fill in the gap left between the lid and the brow. A month later the cataract was needled and the lens afterward removed by the curette. A second needling obtained a clear pupil. Vision being still low, on account of the corneal scar blocking the greater part of the pupil, an iridectomy was made, the sphincter of the iris being incised in such a way that the upper margin of the pupil was brought to within a few millimeters of the corneal margin. The corrected vision, at the time of the exhibition of the patient before the society, was equal to 5/15; and the patient could read newspaper type without difficulty.

Choked Disc.

Dr. P. N. K. Schwenk spoke of a patient whom he had examined, and found with an entirely normal fundus and a vision of 6/5 in each eye with a plus 1½ D. glass. A month later she complained of pain in the left eye, with which she could not see well. She was then found to require a 3 D. glass in the left eye in order to give 6/5 vision, and the same glass was also needed for the right eye, giving the same amount of vision. There was beginning swelling of the left disc, 2½ D. Dr. Schwenk notified the family physician of the patient's condition, and they conducted further examinations together. The urine was negative. Two weeks before the meeting there was also beginning swelling of the left disc of about 2 D. This had increased to 6, and the right eye had 5 D. of swelling. The patient still retained 6/5 vision, but required a slightly stronger glass in each eye. The fields had just been taken and showed a limitation for white. The red and blue fields were interlacing. The patient did not have any localized symptoms, other than what could be seen in the fundus. Dr. Schwenk thought that there was probably a new growth affecting the greater part of the left optic nerve and the anterior parts of the fibers of the right.

Dr. John B. Turner asked whether an X-ray had been taken of the case, stating that Dr. Schwenk had shown a case in which a brain tumor had been diagnosed from the X-ray. A decompression operation was done in this case and the tumor was not found, but there was every symptom of brain tumor.

Dr. Rhein replied that an X-ray had been taken, but that it showed practically nothing. There was no filling of the sinuses whatever.

Dr. Zentmayer asked whether Dr. Rhein meant the sphenoid sinus, and Dr. Rhein replied that he had referred to the cerebral sinuses.

The Result of an Advancement of the External Rectus, After the Method of O'Connor.

Dr. William Zentmayer said that before he described the operation he would like Dr. Schwenk to show the result.

Dr. Schwenk exhibited the patient and stated that he had had a divergence of fifty to sixty degrees. Dr. O'Connor had come to the hospital personally and performed the operation, with the result that the patient had nearly parallel fixation. The internal rectus was advanced without cutting the external rectus muscle. It was thought at the time that the operation would probably have to be done on each eye, but the result was so good that it was decided to let the case alone until it was seen what the final result would be.

Dr. Zentmayer said that the eye operated on by Dr. O'Connor for him at the same time that Dr. Schwenk's case was done was one with convergent squint of twenty degrees. The immediate results showed only ten degrees of correction. but later the amount of squint was lowered and the result was very good—better than any that Dr. Zentmayer had seen obtained from a single advancement without tenotomy. While a good muscle-attachment could be secured by the Worth method. the speaker considered the rest of that procedure as faulty as any of the other modifications of the advancement operation, the weak point in this operation being the scleral attachment of the advanced muscle. For this reason, Dr. O'Connor had been anxious to discover some method of shortening the muscle without having the inserted sutures under any strain whatever. He was led to devise this method by having seen the cowboys on the prairie shorten their surcingles by drawing them up between two loops of another strap. He shortened the muscle in the same way. (See original article, Ophthalmic Record, December.)

The first step in the operation was to lay bare the tendon of the muscle, dissecting it clearly and sharply. It was then loosened with a strabismus hook, passed under it. With a hook a narrow band of the tendinous fibers was separated from the upper margin—about 1½ to 2 mm. The same was done below. Dr. O'Connor then made an incision, turning back a central flap of the muscle out of the way and leaving nothing but the two narrow bands of the tendon lying on the sclera. He next took a piece of Lukens' No. 4, twenty-day catgut, and made a loop beneath one tendinous strip. The next step was to pass the two ends of the suture over the muscle and then through the loop. He then drew upon these two ends, to bring the loop into position. The strain from the loop of catgut was transferred to the tendinous strips, when the catgut was pulled upon, shortening them very considerably. He also did the same thing below. In order to avoid the hump that would be formed by tying this catgut again, he took a piece of fine 00 catgut and tied it around the base. He then did the same thing below. When he laid the tongue of muscle down in position again the considerable amount of shortening obtained could be distinctly seen. This tongue was then advanced by using a single suture. The next step of the operation was to cover the muscle with a fold of conjunctiva and put in a stitch. He did not tenotomize the opposing muscle because, as he had performed the operation only a few times, he wanted to give it a severe test. The sutures not being under any strain, the patient was allowed to go with only one eye bandaged. Dr. Zentmayer stated that Dr. O'Connor uses for this operation No. 2, No. 3 or No. 4 gut. With the latter he expects to get twenty degrees of shortening.

Dr. Posey asked how much muscle was cut off.

Dr. Zentmayer replied that none was cut off. He then stated that he had just received a letter from Dr. O'Connor, in which he had tried to explain why the immediate result had been so slight in the operation that he had performed at the Wills Hospital. He thought that he might have paralyzed the muscle fibers at the time of the operation by using a clamp on them, and that these muscle fibers had gradually recovered their tone when released from the clamp. He said that in future he would put a suture in, instead of using the clamp.

Dr. Zentmayer added that the catgut must be moistened but must not be too moist, because this would cause it to swell and make it difficult to tie.

A Case of Lupus of the Eyelid Treated with a Thiersch Graft.

Dr. McCluney Radcliffe presented this case because he considered it one of unusual interest. The patient had been referred to the hospital by Dr. F. J. Walter and Dr. C. C. Bahannon, of Daytona Beach, Florida. Several years ago he had been treated for a small growth on the right cheek, which was apparently cured by means of a plaster. In August, 1913, he noticed an ulcer at the inner canthus of the left eye, which was treated by cauterization and the X-ray for six months, but without improvement. Dr. Bahannon had had a microscopical examination made of the discharge by the State Board of Health of Florida, and tubercle bacilli were found in it.

At the time of admission to the hospital there was a large ulcer of a dirty grayish color at the inner canthus of the left eye. It was so painful that cocaine had to be applied every few hours in order to give relief, which even then was not complete. The ulcer was curetted and the site covered with a very thin Thiersch graft, which united promptly. The patient had absolutely no pain after the operation. An ulcerative condition existed also on the right side of the nose, near the tip. This had been curetted a week prior to the meeting, leaving a raw surface as large as a thumb-nail and quite deep, over which an exceedingly thin Thiersch graft was placed. The appearance of the graft gave every indication of a perfect result.

Dr. Radcliffe also showed a case of ectropion cured by Thiersch grafts, after failure by other operations.

Dr. Risley congratulated Dr. Radcliffe on his results in these Thiersch grafts, and said that he was particularly delighted with this method, by which it was possible to get *in situ* a sufficiently thin Thiersch graft over the denuded surface. This contracted less than anything else that he knew of, and the ultimate results from its use were better than those of any procedure that he had ever tried. He stated that when these grafts do not include the true dermis they do not shrink afterwards. He had often insisted upon the technique of the operation, stating that one should avoid killing the cells by rough treatment. The grafts should not be removed from the surface of the razor until time to place them on the surface of the wound.

Dr. F. J. Walter, of Daytona, Florida, had been impressed with the healing which had taken place. There had been quite a little suppuration, and he had feared that Dr. Radcliffe would not be able to obtain so profitable a result as he had succeeded in getting. Dr. Walter thought that this success had been due to the use of a very thin graft, which had been placed in good apposition with the parts of the cavity at the time of the operation. The beautiful result that followed had been rather a surprise to him, particularly as the ulcer had been so painful.

Dr. Henry L. Picard asked whether Dr. Radcliffe had taken into consideration the idea that the condition might be an epithelioma in these cases.

Dr. Radcliffe replied in the negative, and stated that he had at first taken it to be lupus.

Dr. Picard said that he had seen cases of lupus in adolescents, but that the ulcerations on the face of a man of the age of the patient, usually appearing on a line from the angle of the mouth to the ear, he had always been led to believe to be cancerous or rodent ulcers.

A Case of Interstitial Keratitis Treated with Injections of Enesol.

Dr. S. Lewis Ziegler showed a patient whom, he understood, had been in the hospital previously and had been treated with Salvarsan, the Wassermann test having been found positive. Improvement, however, had not followed the injections. Dr. Ziegler had used enesol, on account of its successful use by Dr. Darier, who had injected a great many cases with it intravenously in his clinic. Dr. Ziegler had seen him inject ten or fifteen cases in a single afternoon, and as the possibility of obtaining Salvarsan was limited he thought it would be a good thing to try this excellent substitute for it. He stated that in this patient the eyes had been extremely irritable, but were becoming quiet, and that the cornea was clearing very rapidly.

The patient had come into the hospital on the 3rd of July. Dr. Ziegler said that enesol is salicyl-arsenate of mercury. It comes in ampules containing 1/300 of a gram, and can be used either intramuscularly or intravenously.

J. Milton Griscom, M. D.,
Secretary.

CHICAGO OPHTHALMOLOGICAL SOCIETY.

DR. WESLEY HAMILTON PECK, *President.*

NOVEMBER 16, 1914.

The Intracapsular Cataract Operation.

Dr. William A. Fisher reported and exhibited ten cases on which he had performed this operation. At this time, when the intracapsular operation was rapidly supplanting the old method in nearly all sections of India, it might be of interest to the profession to know exactly what could be expected from the operation. Most of the objections that had been made by the profession could be eliminated by proper attention to the Smith technic, which could be mastered by good operators before an intracapsular operation was attempted according to the method the speaker recommended to this society last March and published in Ophthalmology, April, 1914.

The ten patients, with twelve operations, he presented to the society were not selected cases, but ten consecutive operations, and with them were two juveniles, operated upon May 16, 1914. All had been operated upon recently and none of them longer than three months ago, except the double one. He presented the two juveniles on one patient operated May 16, because it was unusual in America to operate both eyes at the same time. Juvenile cataracts were not choice cases for the intracapsular operation and his needle was used more often in those cases than in senile cataracts. The younger the subject the more difficult it was to rupture the zonula, hence the frequent use of his needle in aiding the delivery of the lens. No loss of vitreous occurred in any of the cases when the needle was used. In one of the twelve operations slight inflammation followed, probably caused by prolapse of the iris, but the patient was discharged with a vision of 20/30. This was the only case that had had any pain or received any after-treatment.

In all of these twelve cases the bandage was not removed from either eye until the ninth day, and slight inflammation followed only one, and that was the one with a prolapsed iris.

To do justice to Colonel Smith and his operation, he wanted to emphasize two of the so-called objections so often brought forward by good operators who had not adopted his method. First, the absence of drawn-up pupils, especially those that interfered with vision; second, the absence of astigmatism from the corneal section which had been made in all of those where only one out of twelve had any astigmatism.

Before he reported the results of those twelve operations he wished to emphasize the importance of the Smith technic in any method of removing the lens. This could be mastered by good operators by adhering strictly to it in doing the old operation with the exception of cutting the capsule. If good operators would master the Smith technic in the old operation they would soon find themselves doing many intracapsular operations.

Dr. Oliver O. Tydings had examined several of the cases exhibited by Dr. Fisher and could confirm what Dr. Fisher had said with reference to visual acuity. He did not think any member of the society who had been doing cataract extraction for any length of time had ever operated on so many consecutive cases with so little astigmatism as was shown in these cases. Absolute freedom from inflammatory conditions should commend this operation to the attention of the public. He believed sooner or later this operation would supersede all other operative efforts for the relief of cataract.

Dr. Charles H. Francis asked Dr. Fisher if, in these cases, he bandaged both eyes for nine days.

Dr. Harry S. Gradle said it was his good fortune to go over forty-five cases of Smith extraction with Professor Elschnig in the eye clinic at Prague, and he compared these with three hundred cases of extraction within the capsule, and there was no greater astigmatism following the Smith operation than that following the capsulotomy method. Smith operated on both eyes at once.

Dr. Willis O. Nance asked Dr. Fisher if he considered it absolutely essential to the success of the operation to keep the eye bandaged for nine days. Personally, he felt such a procedure was not good surgery. In one case in which the bandage was left on for seven or eight days the cornea was found to be quite necrotic. Panophthalmitis had resulted and since that time, in every operative case, he had examined the eye at the end of the first forty-eight hours. There were three objections to the operation described. The first was the position of the corneal incision, it being much more in the cornea than the one employed when one expected to make a large conjunctival flap. Second, the possible loss of vitreous. Third, bandaging the eye for nine days without opening the bandage to see what condition the eye was in.

Dr. Fisher, in closing, said there was not one of the twelve patients exhibited who had experienced the slightest trouble on account of the bandage being left on for nine days, and the patients were here to speak for themselves. When the bandages were taken off there was no after treatment except in one, which had a prolapsed iris.

As to the incision, the incision was always finished in the cornea and no attempt was ever made to make a conjunctival flap. Puncture and counter-puncture were made just as deep as the anatomy would permit.

Loss of vitreous was possible, but it did not occur in any of these cases. The number of cases where vitreous was lost would decrease as the operator mastered his technic. In one of these cases both eyes were operated upon at the same time. It was common practice in India, as far as he knew, to operate upon both eyes at the same time. The objections to operating upon both eyes at the same time would disappear as the objections to the intracapsular operation would surely disappear.

Intranasal Operation for Dacryocystitis.

Dr. Frank Brawley reported the case of a woman, fifty years of age, who had dacryocystitis of nearly a year's standing. Local treatment for several weeks was without avail. The dacryocystitis was controlled by syringing, but it was impossible to pass a probe through the nasal duct. Two weeks ago last Thursday he did intranasal opening of the tear sac, dissecting up the muco-periosteum for about a centimeter square anterior to the attachment of the middle turbinate. Instead of using the chisel method of West, he made use of a cutting burr such as was used in mastoid operations. This burr was made of the proper length to reach the area. He cut through with this long burr very quickly, enlarged the bone opening up and down and sideways. A No. 5 probe was passed into the tear sac, forcing it slightly through the bone wound, where a large piece of the sac was punched out. Today there were only slight evidences of reaction, some thickening at the margin of the bony wound, but tear drainage was perfect.

Dr. Joseph C. Beck had operated on four cases of dacryocystitis by a method a little different from the one described by Dr. Brawley. The last case was a boy, six years of age, who had had chronic dacryocystitis since he was a year old. There was no benefit from the usual treatment. Patient had ulcerative rhinitis in infancy. The naris was very small. It was now two weeks since the operation was done, and it was too early to judge whether the opening was going to remain patent.

Dr. J. Sheldon Clark, Freeport, Illinois, said in cases where the bone was heavy or thick the burr would be of some advantage, but where one had thinner bone to deal with the chisel would serve the purpose nicely, and in such cases he had had no trouble in using that instrument.

Dr. Oliver O. Tydings said it was more satisfactory to the operator and more comfort to the patient to use the burr whenever it was possible to do so.

Dr. Michael Goldenburg saw a number of cases last summer that had been operated on by different men, and some of them had been under treatment for nine months after the operation. He examined the noses of some of these patients and found pus flowing freely over the middle turbinate and going on through the middle meatus. He failed to see the advantage of the intranasal operation over the external operation. The advocates of the intranasal operation claimed that the only advantage was it did not leave an external scar.

Dr. Oliver O. Tydings stated that some years ago he operated on a case of forty years' standing. There was no reason why there should be a constant flow of pus if the opening was made at the bottom of the canal and drained. There would be free drainage and one would get rid of pus.

Dr. Willis O. Nance asked Dr. Goldenburg as to the result in the cases he had seen relative to the relief of the epiphora.

Dr. Goldenburg said he was in Killian's clinic and saw two patients, one of whom was having trouble all the time from epiphora.

Dr. Harry S. Gradle saw half a dozen cases that were operated on by West in Hirschberg's clinic, and in these the epiphora was relieved and the tear passage restored.

Dr. Brawley stated that some of the cases mentioned by Dr. Goldenburg might be explained on the ground of ethmoidal infection. There might be cases in which there was considerable necrosis in the lachrymal fossa, but with the burr operation, if there was necrosis and soft bone it would be easy to remove it, so that we would not expect to have a chronic discharge.

Cavernous Sinus Thrombosis and the Future.

Dr. Henry Glover Langworthy, Dubuque, Iowa, stated that the study of cavernous sinus thrombosis had been limited in the past. First, because the cases were rare and the average physician in a lifetime would scarcely see more than two or three sufferers with the disease; second, being surgically less approachable, perhaps, than almost any other structure in the body.

After speaking of the symptoms, the author stated that in making the diagnosis of a given case, even without previous experience, one might formulate this rule: When there was increasing exophthalmos and lid edema on the same side as a somewhat distant infecting focus, any edema of the face and neck, septic temperature, and the slightest evidence of beginning lid edema or exophthalmos of the opposite eye, we were safe in saying that the later positive symptoms of cavernous sinus thrombosis were present beyond a doubt.

The prognosis was bad and the mortality 99 per cent. For all working purposes the mortality under present conditions should be considered 100 per cent.

As possible operative route to attack the sinus or methods of treating the same, the following were mentioned as still to be perfected: Mosher's proposed anterior route through the orbit; Hartley-Krause Gasserian ganglion route through the side of the skull; the Luc-Langworthy route upward through one side of the nose and sphenoidal cavity; and, lastly, in certain otitic cases energetic treatment of the original focus alone from behind, namely, by opening the lateral sinus and jugular bulb thoroughly and resecting the internal jugular vein.

DISCUSSION. Dr. Albert E. Halstead had seen a number of cases of thrombosis of the cavernous sinus, most of them the result of trauma. Two cases were the result of gunshot wounds. One was a gunshot wound of the ear in which the bullet passed through the middle ear, struck the greater wing of the sphenoid after penetrating the ganglion, and lodged in the sinus cavity. Another was a gunshot wound of the temporal region in which the sinus was injured and patient developed sinus thrombosis. At first, patient lost one eye, then the other, and finally recovered after both eyes had been removed. The patient with a gunshot wound of the ear lived for about two weeks. He developed what the speaker supposed to be, in addition to sinus thrombosis, brain abscess. He operated because of the brain abscess and not because of the sinus thrombosis. He exposed the sinus easily by the usual route used in reaching the Gasserian ganglion and was able to scrape out all the sinus and remove the bullet, which was lodged in the sphenoid bone, but the patient died of meningitis. He had had meningitis before operation, but the speaker was not aware of the extent of it. He had had two cases, besides these two of gunshot wounds, that got well without operation, which demonstrated to him conclusively that patients with thrombosis of the cavernous sinus might recover spontaneously.

Dr. Joseph C. Beck spoke of a method which he had developed of reaching the hypophysis by way of the antrum following the Henson operation, and had operated successfully on two cases of hypophyseal tumor of the glandular region. One patient recovered his vision; the other had since died from progressive sarcoma which began in the hypophysis and the greater part of the tumor was found in the cerebral portion.

Dr. John R. Fletcher stated that as soon as he saw Dr. Kanavel operate on the living for tumor of the hypophysis he went to the dead house and undertook the same operation upon the dead, and found the route through the nose on the dead subject not very difficult. There he had no difficulty with hemorrhage, which was likely to occur in the living subject. Since then he had done the operation several times upon the cadaver and had also followed the route referred to by Dr. Beck in reaching the hypophysis. In the first operation he did, following that of Dr. Kanavel's on the living, he not only went through the nose but through the Gasserian ganglion region and was able to demonstrate that case. The specimen was shown several years ago before the Chicago Medical Society.

Dr. Langworthy, in closing, said it would seem that some cases of thrombosis of the cavernous sinus were amenable to surgical treatment, while others were not. The operator must decide that question for himself.

The Ocular Manifestations of Diseases of the Nasal Accessory Sinuses.

Dr. Richard J. Tivnen read a paper on this subject, which was illustrated by stereopticon views showing the anatomic relations of the structures discussed.

In a consideration of the ocular manifestations of nasal accessory sinuses, of prime importance was the anatomic relation of these cavities to the ocular structures. This relation was a very intimate one and suggested at once a great likelihood of extension of pathologic processes from such closely allied structures. Apart from this close anatomic relation, ocular manifestations, occurring in common with sinus disease, had been explained by many varied theories. These comprised in the main as their basic principle disturbed drainage from the sinus, with its attendant interference with physiologic function, and the varied circulatory manifestations which such processes entailed. The disturbance to ocular structures consequent upon sinus disease practically might include every tissue and structure of the eye and orbit. In the lids, causing redness and edema; in the muscles, weakness, paresis, disturbance of accommodation; in the globe, ex or en-ophthalmos of various types; in the orbit, abscess, cellulitis; in the uveal tract, iritis, irido-cyclitis, uveitis, etc.; in the optic nerve, neuroretinitis; in the chorioid and retina, chorio-retinitis, etc.; in the cornea, keratitis and abscess.

The symptomatology was influenced by the location, extent and severity of the particular process and ranged from slight asthenopic symptoms, such as blurring on use of the eyes to absolute blindness.

The essayist at this point exhibited stereopticon slides showing the intimate anatomic relation of the sinuses to the orbit and ocular structures.

Many eye cases of this class were labeled hypochondriacs and their distressing complaints were considered imaginary or greatly exaggerated. A more careful study of this type of case would disclose that many of them were afflicted with sinus disease, with secondary ocular manifestations. Apart from the specific pathology of the individual structure involved, there was quite commonly present in such cases a toxemia, which might manifest itself in such vague symptoms as depression, lassitude, inability to concentrate, etc. The conspicuous role played by certain structures, notably the tonsils and teeth, in the production of general systemic infections was nowadays well recognized. Guided by these experiences and keeping constantly in mind the exceeding vulnerability of these neighboring structures, the relative frequency of sinus involvement, and the fact that often these involvements did not frankly disclose themselves, the intimate anatomic relation of the structures, would frequently serve to direct the attention of the ophthalmologist to these parts as possible focal points in many obscure ocular lesions.

In summarizing, the author felt the following conclusions were warranted: 1. Interrogating the nasal accessory sinuses in all disturbances of the eye and orbit of an obscure nature. 2. Obtaining a clear history of the ocular manifestations, regarding such symptoms as frequent head colds, headaches, etc., associated with the outbreaks of the ocular trouble, as suggestive of sinus complications. 3. Co-operation in all obscure eye cases with the rhinologist, the otologist and oral surgeon. The value of such team work could not be overestimated. 4. A careful ocular examination, particularly the examination of the fields of vision for form and color.

Dr. Nelson M. Black, Milwaukee, Wisconsin, gave a demonstration of the transmission qualities of the glass used for railroad signaling, and that worn for protection by employees in railway service and other industries where protection from intense light was necessary. He discussed radiation and the spectrum of radiant energy. The properties of colors or color constants were applied to railway signals, illustrated by a chart showing transmission at the various Fraunhofer lines. He spoke of the future of railway signaling and the necessity of absolute elimination of all color blind in railway service. Attention to the factors was given which interfere with the visibility of the signals and the protective measures used. He pointed out the necessity of a protective glass which would not interfere with the intensity and hue of a color signal and thus reduce the range.

An Unusual Form of Persistent Capsulo-Pupillary Membrane.

Dr. L. E. Barnes reported this case. The patient, H. D., was thirteen years of age. Erysipelas at three weeks of age following a scalding burn; mushroom poisoning at five years of age. Patient's history and family history negative. Both eyes, normal externally, anterior chambers normal, and pupils dilate well under atropin.

Right eye. Underneath the anterior capsule in the pupillary area in a horizontal line were three punctate opacities of the lens. In the upper nasal quadrant was a subcapsular opacity, irregular in outline, two millimeters in diameter and one-half millimeter deep. From the upper inner edge ran a broad, flat band of opacity. First it went directly back, then downward and back, terminating in a point just in front of the posterior capsule. This opacity was irregular in outline and seemed to have a central zone of opaque tissue surrounded by flocculent opacities. The rest of the lens was normal in size and shape. The edge of the lens did not appear to be nicked like a coloboma. The opacity did not interfere with central vision. The fundus was normal. The eye was hyperopic + 1.50 D. The left eye was similar to the right, only there was an additional opacity that appeared to encircle the nucleus of the lens. The irregular opaque fibers were more fibrillar than in the right eye, with less surrounding corneal opacities. The ophthalmic literature at the author's command for the last five years contained no reports of a similar embryological case.

PAUL GUILFORD,
Secretary.

COLORADO OPHTHALMOLOGICAL SOCIETY.

H. R. STILLWILL, M. D., *President.*

NOVEMBER 21, 1914.

Corneo-Scleral Trephining.

Dr. E. T. Boyd presented a man whose left eye had been trephined on December 12 on account of repeated attacks of a glaucomatous character. No history of iridocyclitis could be obtained, and the tension was 66 mm. of Hg. Although apparently first-class drainage was being had through the trephine hole, and iridectomy had been done, the tension was now 49 mm. Before the operation the patient had barely light perception, and about three days after the operation he could count fingers at four or five feet. There was a deposit on the anterior lens capsule.

DISCUSSION. Dr. Patterson thought the condition secondary to iridocyclitis, but regarded the trephine operation as the best thing for this eye.

Dr. Matson had treated the patient some time back for iridocyclitis in this eye, but had not seen him recently. Tension was somewhat increased with the original attack.

Congenital Fistula of the Lacrimal Sac.

Dr. E. T. Boyd presented a case of congenital fistula of the right lacrimal sac in a man of about twenty-one years. There had been no discharge from the sac with the exception of a small amount of clear lacrimal fluid. The passage had been almost closed by the actual cautery, the use of which would be repeated if the leakage continued.

Dr. Matson had a case of tiny fistula just opposite the upper punctum in a woman of thirty years. It would admit only a slender probe. What should be done for this?

Dr. Jackson would cauterize freely in Dr. Matson's case, going to the bottom of the passage.

Dr. Patterson would open the passage first and then cauterize.

Vossius' Lens Ring.

Dr. J. B. Robinson presented a man of twenty-three years whose left eye had been injured on December 13, 1913, by a glancing blow from a broken drill punch. The patient's physician had at once instilled atropine, and the pupil was fully dilated when the patient came to Dr. Robinson on December 16. At that time there was a small clot of blood in the outer angle of the anterior chamber, and the man gave a history of having had only light perception for about forty-eight hours. The eye was said to have possessed normal vision before the accident. On the anterior surface of the lens, in a position corresponding to that of a moderately contracted pupil, was a very delicate ring, only seen upon close examination with the ophthalmoscope. There was also a thicker line of pigmented deposit near the lower margin of the dilated pupil. (Dr. Robinson reports later that the ring had entirely disappeared by November 28, 1914.)

DISCUSSION. Dr. Ringle thought the ring was a pigment deposit resulting from the impact of the iris on the lens capsule.

Dr. Strader remarked that in the case shown by him in March, 1914, there had been three or four pigment spots at the center of the ring, which could hardly be accounted for by the idea that they were pigment from the iris.

Dr. Jackson stated that experimental work which had been done on this subject seemed to indicate that the opacity was inside the lens capsule, being really in the epithelium and the superficial fibers. It was possible that the hemorrhage which had been seen in the anterior chamber had come from a laceration of the iris which was now concealed by the dilatation of the pupil.

Dr. Patterson did not believe there was any deposit of pigment and regarded the ring as being due to a change in refraction of the lens fibers.

Ciliary Spasm Simulating Myopia.

Dr. C. A. Ringle reported the case of a young woman of seventeen years with a decidedly myopic history, and who had come to him for treatment for an apparent myopia. Distant vision was decidedly below normal. Under complete cycloplegia, the eyes proved emmetropic or slightly hyperopic, and the vision was practically normal. After recovery from the cycloplegic, best vision was obtained only by use of a —0.75 lens. It was suggested that the eyes were just passing over into myopia.

DISCUSSION. Dr. Libby, regarding the case as one of ciliary spasm, suggested keeping the patient under atropine for some weeks without the use of any lens.

Dr. Bane thought the patient would have to be watched for some time before a proper opinion could be formed as to the nature of the trouble.

Retinal Arterio-Sclerosis.

Dr. Edward Jackson reported briefly two cases illustrating the changes in the retinal vessels due to high blood pressure. One of these patients, aged sixty-two years, came with no impairment of vision, but with the retinal veins obscured and narrowed where they were crossed by the arteries, and somewhat kinked. His blood pressure, which a year previously was said to have been 160, was now 210 mm. The other patient, a man of thirty years, had suffered from headache, but showed a fundus which was normal except for some small corkscrew twigs on the retinal vessels between the disc and the macula. The veins appeared normal where crossed by the arteries. His blood pressure proved to be 135 mm. Dr. Jackson had not been able to make up his mind that corkscrew vessels were an important sign of increased blood pressure. While in the East recently he had come across Gunn's original contribution on this subject to the Ophthalmological Society of the United Kingdom, which he read. This paper was published in 1892, and was only a page in length. (A reprint of this paper will appear in a paper by Dr. Jackson on retinal angiosclerosis, to be published in the Annals of Ophthalmology.)

DISCUSSION. Dr. Patterson said that he saw corkscrew vessels, especially toward the macula, in young people and others, which were absolutely physiological. Dr. Patterson also referred to the case of a woman of forty-seven years, who, in spite of marked changes in the retinal vessels and a blood pressure of 260 mm. two years ago, was now, after changing her mode of living, apparently in very much better health. Some extravasations which she had had in the fundus two years ago were now almost impossible to trace.

Dr. Jackson observed that the more cases of this kind were recognized early the more of them there would be who lived a long time after recognition or recovered entirely. He had seen a patient who was under the late Dr. Stevens some years ago on account of arterio-sclerosis affecting the eyes, but who now played golf every day instead of sitting in his office, and whose vessels had shown very little further change.

Tobacco Amblyopia at 63 Years.

Dr. J. A. Patterson reported the case of a man of sixty-three years who had come in August on account of poor reading vision. His corrected distant vision was 4/12 most in each eye. Although a hunchback, his health had always been good and he had never before had any trouble with his eyes. The temporal side of each nerve was a trifle pale. After an absolute central scotoma had been discovered in the field of each eye, the patient confessed to continual smoking since the death of his wife less than a year ago. Under abstinence from tobacco and the use of Turkish baths, iodides, and later strychnine, the vision of the right eye reached 6/6 and that of the left 6/9, but the central scotoma persisted when the patient was last seen, in September.

The particularly unusual feature of this case was the age of the patient, tobacco amblyopia being most frequent between 40 and 50 years of age. It was also noteworthy that this patient had not used any alcohol.

Pupillary Inequality with Syphilis.

Dr. G. F. Libby reported the case of a man of forty years in whom syphilis had been diagnosed the previous June, the Wassermann reaction being positive. Salvarsan had been administered five times, and mercury was now being given. There had recently been intermittent headache for three weeks, ocular fatigue and conjunctival hyperemia. The patient was worried and depressed, and a previously existing deafness had increased. The media were clear and the fundi normal, except that the discs were hyperemic and the retinal vessels rather tortuous, the veins being distended. Correction of 3 D. of compound myopic astigmatism in the right eye, and 0.62 D. of compound hyperopic astigmatism in the left eye gave normal vision and relieved the headache and asthenopia. There were 6° of esophoria for distance, 10° for near, and ½° of left hyperphoria. The noteworthy point in the case was that in ordinary daylight the right pupil was 3 mm. in diameter and the left 2½ mm., although under full cycloplegia the right pupil dilated only to 6 mm., while the left widened to 7 mm. After the effect of the cycloplegic had passed, the pupils returned to the same size as before, the right being ½ mm. larger than the other.

Dr. Libby had noted this pupillary phenomenon several times in observations covering many years, but was not prepared to state in what proportion of these cases syphilis was present.

Wm. H. Crisp,
Secretary.

CORRESPONDENCE

February 12, 1915.

The Ophthalmic Record,

In the February issue of The Ophthalmic Record, I find an interesting article of Dr. Verhoeff of Boston.

I am writing Dr. Verhoeff in regard to a procedure which I have found useful, and it may be of interest to the readers of The Ophthalmic Record to have this procedure at their disposal for the prevention of intra-ocular hemorrhage during operation, or ocurring as result of operation.

It has been my practice, one hour before operating on glaucoma cases or senile cataract, to administer hypodermatically 1/20 gr. pilocarpine hydrochloride.

Since beginning this some years ago I have been fortunate, either as a coincidence or because of the injection, to have no such distressing result as reported by Dr. Verhoeff.

Yours very truly,

Robert Scott Lamb.

The ophthalmic world will learn with regret of the death of Prof. Jean Alfred Fournier of Paris, whose name is universally known as the authority on syphilis.

NEWS AND NOTES.

Personals and items of interest should be sent to Dr. Emory Hill, 122 South Michigan avenue, Chicago, Ill.

As these columns go to press on the 15th of the month previous to publication, contributors will kindly send in their items before that date.

In the Manitoba Medical College, Dr. T. Herbert Bell has been appointed lecturer in clinical ophthalmology.

Dr. Milton A. Barndt, late of 307 Grand Ave., Milwaukee, has now located at Long Branch, California.

Dr. Wendell Reber of Philadelphia has been appointed to succeed Dr. Wm. Campbell Posey on the Pennsylvania Commission for the Conservation of Vision.

At the December meeting of the Colorado Ophthalmological Society Dr. A. C. H. Friedman was elected president and Dr. E. T. Boyd secretary.

The Manhattan Eye, Ear and Throat Hospital of New York City has received a bequest of $5,000 by the will of the late Augustus Cleveland Brown.

Dr. Wm. L. Richardson of Boston has been made a trustee of the Perkins Institution and the Massachusetts School for the Blind.

Drs. J. W. Murphy and M. H. Urner announce the removal of their offices and private hospital to the Union Central Life Bldg., Fourth and Vine streets, Cincinnati.

Dr. G. S. Savage of Nashville, Tenn., delivered an address on the subject "The Nervous Mechanism of the Eyes" at the meeting of the Tri-State Medical Association of Virginia and the Carolinas on February 17.

Drs. Charles H. Beard and Willis O. Nance have resigned from surgeonships at the Illinois Charitable Eye and Ear Infirmary. Dr. Beard is succeeded by Dr. W. A. Barr whose assistant surgeons will be Drs. Von Der Heydt and Woodnick. Dr. Nance is succeeded by Dr. Nils Remmen, whose assistant surgeons will be Drs. Geraghan, Lebensohn and Eiss.

The following deaths of ophthalmologists are announced:

Dr. Charles A. E. Lesage of Dixon, Ill.
Dr. E. M. Anderson of Spokane, Washington.
Dr. Isaac Leopold of Philadelphia, Pa.
Dr. Henry Bezou of New Orleans, La.
Dr. G. H. Desjardins of Montreal, Canada.
Dr. Fred H. Weir of Portland, Oregon.
Dr. Dudley Reynolds, Louisville. Ky.

NEW BOOKS.

Ophthalmic Surgery, a treatise on surgical operations pertaining to the eye and its appendages, with chapters on Para-Operative Technique and Management of Instruments, by Charles H. Beard, M. D., Fellow of the American College of Surgeons; Surgeon to the Illinois Charitable Eye and Ear Infirmary; Oculist to the Passavant Memorial Hospital, Chicago; ex-President of the Chicago Ophthalmological Society; Member of the American Ophthalmological Society, etc.

Second edition, revised and enlarged, with nine plates, showing one hundred instruments and 374 other illustrations. Philadelphia, P. Blakiston's Son & Co., 1012 Walnut street.

Lionel Topaz, 35 North Dearborn street, Chicago, has recently published The Red Book of Eye, Ear, Nose and Throat Specialists, Containing the Names and Addresses of Medical Specialists in the Diseases of the Eye, Ear, Nose and Throat for the United States and Canada—Ophthalmological and Oto-Laryngoegical Societies—Medical and Post-Graduate Schools and Colleges—A Selected List of Books Pertaining to the Eye, Ear, Nose and Throat, and Other Valuable Information. Price, $3.00.

CHICAGO EYE CLINICS.

Hour	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
9 A.M.	Richard S. Pattillo (P.-G.) G. W. Mahoney (Poli.) R. B. Stephenson (P.-G.)	*Geo. F. Suker (P.-G.) C. H. Francis (Poli.) A. Duncan (P.-G.)	W. F. Coleman (P.-G.) S. M. Hager (Poli.) H. N. Lyon (P.-G.)	G. W. Mahoney (Poli.) Rich'd S. Pattillo (P.-G.) R. B. Stephenson (P.-G.)	C. H. Francis (Poli.) R. B. Stephenson (P.-G.)	S. M. Hager (Poli.) C. W. Hawley (P.-G.) H. J. Morlan (P.-G.)
10 A.M.	Brown Pusey (N.W.U.) Geo. T. Jordan (N.W.U.) Robert Blue (N.W.U.) Every day, 10-12 A. M.					
1 P.M.	M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) Emily Selby (Inf.) *H. W. Woodruff (Inf.) *Oscar Dodd (Inf.) C. A. Leenheer (Inf.) D. W. Eiss (Inf.) E. R. Cressley (Inf.) C. C. Clement (Inf.) E. V. L. Brown (County) and Geo. F. Suker (County) Daily, 2:30 P. M.	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) E. K. Findlay (Inf.) Wm. E. Gamble (Inf.) J. B. Loring (Inf.) *Wm. H. Wilder (Inf.) S. L. McCreight (C.C.S.) E. V. L. Brown (Inf.) Robt. Von der Heydt (Inf.) L. G. Hoffmann (Inf.) A. P. Hunneman (Inf.) M. Goldenberg (Inf.) Francis Lane (Inf.) H. Walker (Inf.)	M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) Emily Selby (Inf.) *H. W. Woodruff (Inf. *Oscar Dodd (Inf.) C. A. Leenheer (Inf.) D. W. Eiss (Inf.) E. R. Cressley (Inf.) C. C. Clement (Inf.)	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) *Frank Allport (St. Luke's) *Frank Brawley (St. Luke's) E. K. Findlay (Inf.) Wm. E. Gamble (Inf.) *Paul Guilford (St. Luke's) *Casey Wood (St. Luke's) *T. A. Woodruff (St. Luke's) J. B. Loring, (Inf.) *Wm. H. Wilder (Inf.) S. L. McCreight (C.C.S.) E. V. L. Brown (Inf.) Robt. Von der Heydt (Inf.) L. G. Hoffman (Inf.) A. P. Hunneman (Inf.) M. Goldenberg (Inf.) Francis Lane (Inf.) H. Walker (Inf.)	M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) Emily Selby (Inf.) *Oscar Dodd (Inf.) C. A. Leenheer (Inf.) D. W. Eiss (Inf.) E. R. Cressley (Inf.) C. C. Clement (Inf.) H. W. Woodruff (Inf.)	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) E. K. Findlay (Inf.) Wm. E. Gamble (Inf.) J. B. Loring (Inf.) *Wm. H. Wilder (Inf.) S. L. McCreight (C.C.S.) E. V. L. Brown (Inf.) Robt. Von der Heydt (Inf.) L. G. Hoffman (Inf.) A. P. Hunneman (Inf.) M. Goldenherg (Inf.) Francis Lane (Inf.) H. Walker (Inf.)
3 P.M.	*Wm. E. Gamble (U. of I.) Wm. H. Wilder (Rush) H. S. Gradle Daily 3-5 (E. M. D.)	R. J. Tivnen (M. H.)	W. Allen Barr (C.C.S.) *Wm. E. Gamble (U. of I.)	Wm. H. Wilder (Rush) R. J. Tivnen (M. H.)	W. Allen Barr (C.C.S.)	Geo. F. Suker (P. G.) 2-5 H. Cuthbertson A. Duncan
4 P.M.	W. F. Coleman (P.-G.) H. N. Lyon (P.-G.) 2-5	C. W. Hawley (P.-G.) 2-5 J. F. Campbell (P.-G.) H. J. Morlan (P.-G.)	J. B. Loring (U. of I.) E. K. Findlay (U. of I.) G. F. Suker (P.-G.) 2-5 H. Cuthbertson (P.-G.)	C. W. Hawley (P.-G.) J. F. Campbell (P.-G.) H. J. Morlan (P.-G.)	W. F. Coleman (P.-G.) 2-5 H. N. Lyon (P.-G.)	

*Special operative eye clinic.

ABBREVIATIONS:

C. C. S.: Chicago Clinical School, 1844 W. Harrison Street.

E. M. D.: Emanuel Mandel Dispensary, 1012 Maxwell St.

County: Cook County Hospital, W. Harrison and Honore Streets.

Inf.: Illinois Charitable Eye and Ear Infirmary, Peoria and Adams Streets.

M. H.: Mercy Hospital.

Poli.: Chicago Policlinic and Hospital, 221 W. Chicago Avenue.

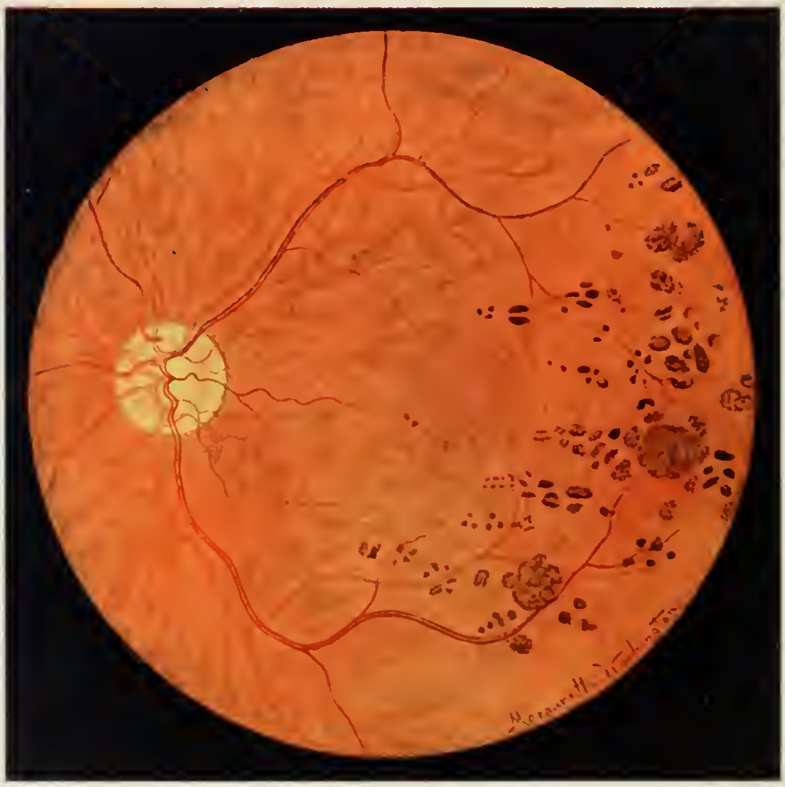
P.-G.: Post-Graduate Medical School of Chicago, 2400 Dearborn Street.

N. W. U.: Northwestern University, 2431 Dearborn Street.

Rush: Rush Medical College, W. Harrison and Wood Streets.

St. Luke's: St. Luke's Hospital, 1416 Indiana Avenue.

U. of I.: College of Medicine, University of Illinois, Congress and Lincoln Streets.



Congenital Pigmentation of the Retina. (Burton Chance.)

THE
OPHTHALMIC RECORD
A MONTHLY REVIEW OF THE PROGRESS
OF OPHTHALMOLOGY

Vol. XXIV CHICAGO, APRIL, 1915 No. 4, New Series

ORIGINAL ARTICLES

HOMONYMOUS CRESCENTIC SCOTOMAS IN ASSOCIATION WITH ETHMOIDITIS AND TOOTH-ROOT ABSCESS.[1]

BY
G. E. de SCHWEINITZ, M. D.
PHILADELPHIA.

In recent years various types of central amblyopia (central scotomas) in association with posterior ethmoiditis and sphenoiditis have been observed. We know that certain diseases, the nature of which was formerly badly understood, owe their origin to distant local septic areas. For example, in our line of work we have come to realize that many forms of iritis and uveitis are bacterial in origin, the focus of infection being, for example, in the tonsil, in the accessory sinuses, and particularly in the mouth, notably in the presence of pyorrhoea alveolaris and tooth-root abscess. The present case is recorded because it seems to owe its clinical features to disease in two of the areas named, and because of the somewhat unusual type of the central amblyopia. The history is as follows:

A man, aged 45, an engineer on a sea-going steamship, reported for treatment on the 16th of March, 1914, having been sent to me by his physician in order that I might investigate his visual defects. The patient was sturdily built and of excellent mentality. Except for a sluggish liver, he had usually been in excellent health. He smoked, but not excessively, and his habits were good: indeed, his position was such that any departure from a normal life would have been a serious business. At the time of the examination his general health was very good; but he had been much in the tropics, and hence it is not remarkable that he had from time to time suffered from hepatic disturbance. He recited the history of one attack of malaria. In 1898 he acquired a urethral gonorrhœal infection, which lasted for a considerable period of time, about ten months. Syphilis was absolutely denied, and a Wassermann test was negative. From February 17th to 23rd of the same year in which he applied for treatment, and therefore about one month prior to his examination by me, knife-like shooting pains began over the left eye, radiating above the ear and from there to the vertex. Following this attack of pain he observed that when looking at objects some distance away the periphery of each object was obscured, or, as he expressed it, blotted out. Two years prior to these visual disturbances he had been treated for left antrum disease, and he had also submitted to a good deal of dental work. He had suffered from headache, but at the time of his examination these headaches were no longer present. The vision of the right eye was 5/5, of the left eye 5/9. There were no anomalies of the exterior

---

[1] A paper, somewhat elaborated, read before the Ophthalmic Section of the College of Physicians.

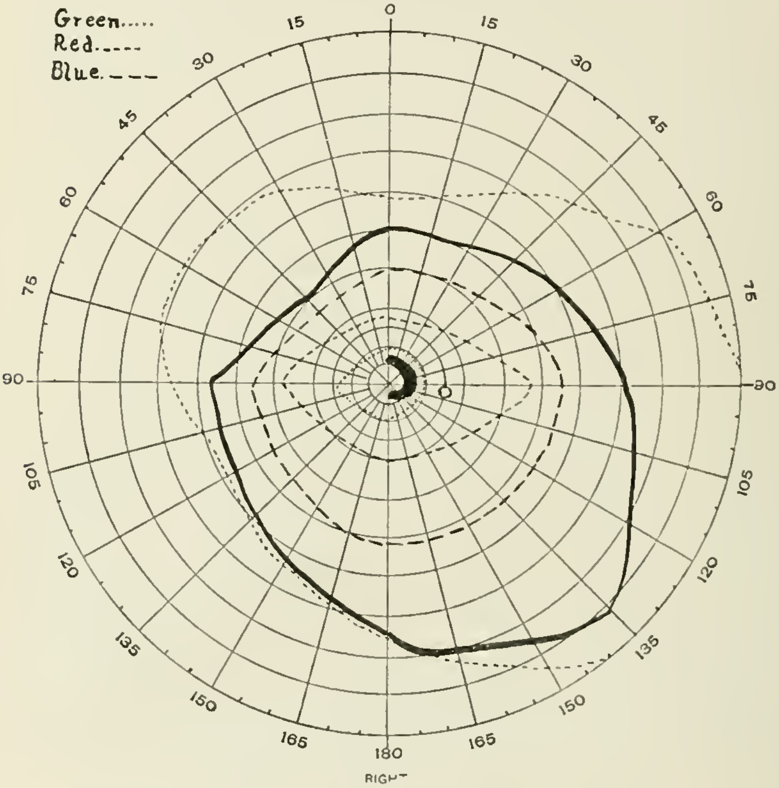


Fig. 1. Right Visual Field Showing Crescentic Scotomas

ocular muscles, except a very slight exophoria. The accommodation was practically normal.

An examination of the visual field revealed the conditions which are depicted in Figs. 1 and 2, namely, a good deal of contraction, both for form and color. To the right side of each fixing point there was a crescentic scotoma, larger in the left than in the right field. Ophthalmoscopic examination was practically negative, each disc being a vertical oval of good color, and there were no changes in the blood vessels of the fundus. A few little yellowish points could be detected, which from their character and distribution suggested small excrescences on the lamina vitrea. The pupil reactions were normal.

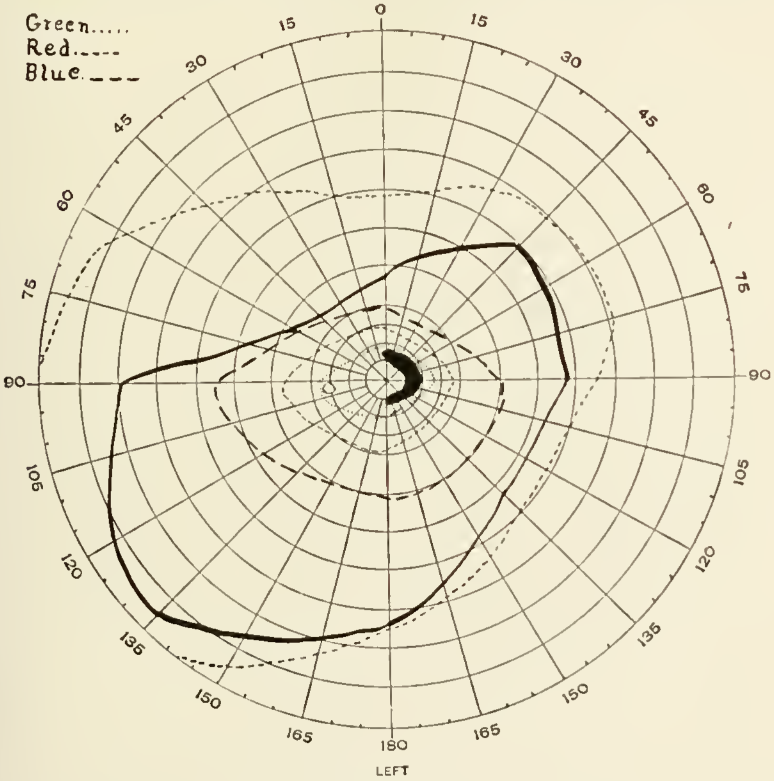


Fig. 2. Left Visual Field Showing Crescentic Scotomas.

These data were reported to his physician, Dr. Wieder, and it was suggested that a very careful examination should be made of the sinuses, both by ordinary rhinological methods and by means of the X-rays, and that a general medical examination should be instituted. The results of the general examination proved to be negative, and no disease of the thoracic or abdominal organs could be detected. Dr. Wieder found posterior ethmoiditis, not in a very acute stage, and immediately began intranasal and sinus treatment, and referred the patient to Dr. Pfahler for X-ray examination.

Dr. Pfahler reported as follows: "I find more trouble about the teeth than in any other portion of the skull. There are large abscess cavities at the apices of the roots of the incisors on both sides, and abscess cavities at the apices of the cuspids on both sides. The exact location of these should be determined by a dentist. In the general cranial cavity nothing abnormal has been recognized. The sella turcica is normal in size, although the posterior clinoid process is lacking in density. This condition has been noted in such a variety of conditions that no importance can be attached to it. The sphenoidal

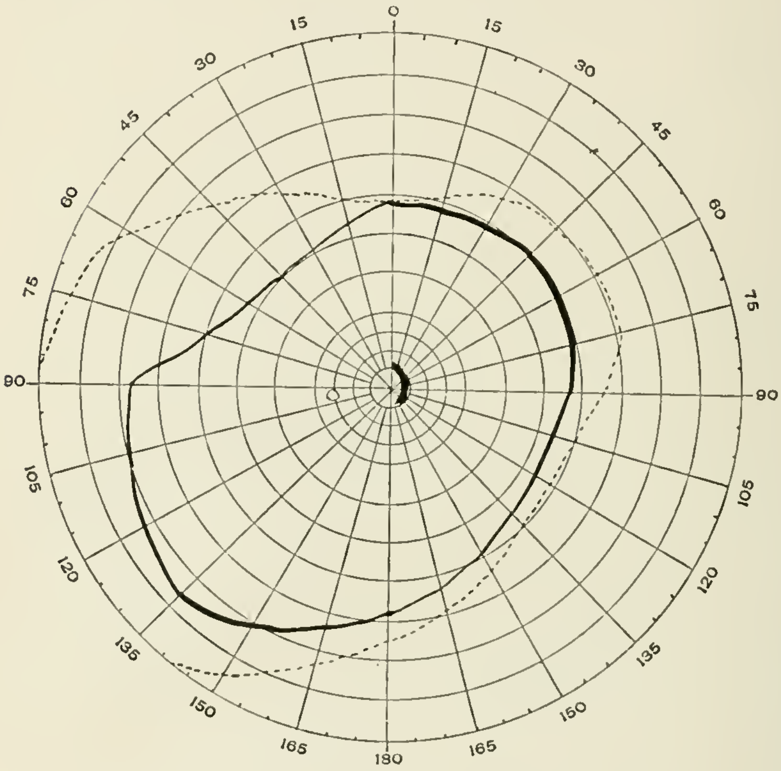


Fig. 3. Left Visual Field Ten Days After Treatment of Ethmoid and Root Abscess Was Begun.

sinuses are clear, but the posterior ethmoidal sinuses on the left side are filled with exudate. The frontal sinuses are unaffected, and the same is true of the maxillary sinuses."

The dental examination was made by Dr. Praul, who writes: "The original infection and the source of the other trouble is caused by the crowning of the upper right central incisor without treatment of the corresponding root canal. The operator used a gold shell as an abutment, to replace the left central incisor, which had been extracted. This work was done in the West Indies a good many years ago." Dr. Praul further states that he warned the patient on the 15th of March, 1914, therefore a day before I saw him, that the root of the tooth should be treated, and a different type of fixture should be used, but at that time he could not obtain permission to make the change. Later, when the plates were made of the upper and lower jaw, Dr. Praul reported that they showed four large

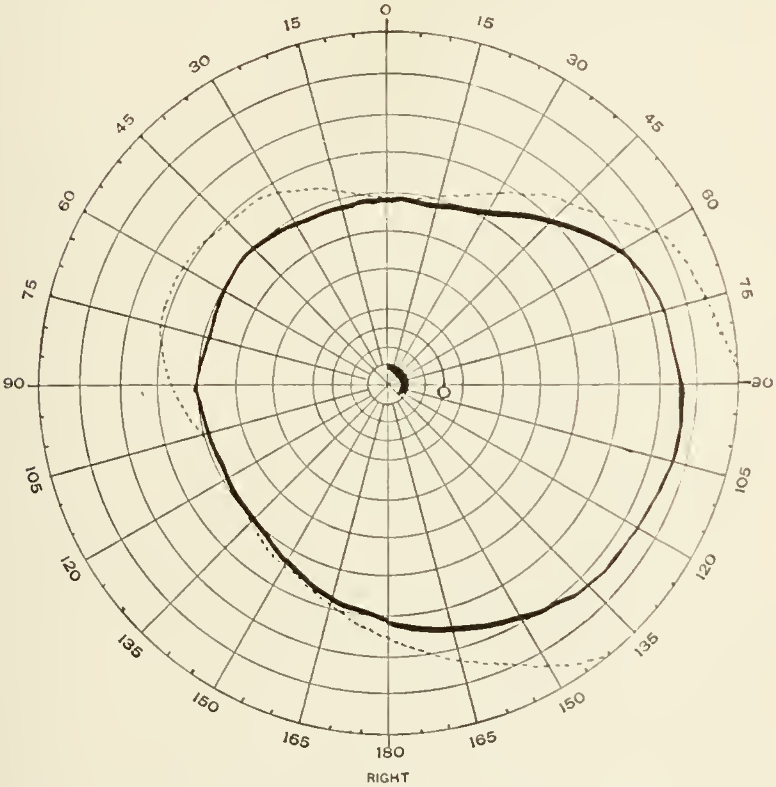


Fig. 4. Right Visual Field Ten Days After Treatment of Ethmoid and Root Abscess Was Begun.

abscess cavities about the upper anterior roots. The involved teeth were extracted and the sockets drained. Dr. Wieder continued the treatment of the ethmoidal lesion, and iodid of potassium was administered.

At the expiration of ten days the patient returned, the vision of the right eye being 6/5 and the left 6/7.5, and the visual fields were markedly improved in extent and the scotomas greatly reduced in size, were detectable only with a small 1 mm. disc (Figs. 3 and 4).

Shortly after this visit he was ordered to sea, and about three or four months later I received a letter from him which reads as follows: "My eyes continue to improve, and I have no difficulty in writing and very little trouble in reading. Indeed, the eyes seem to be entirely correct, except that at times I still have a faint blindness to the right side while I am reading. The blind spot seems to come over the last word on the line, and I do not see it until I start the following line, when I find that I have missed this last word, and go back to the line above and find the word. Occasionally I have a slight pain in the top of my head and just back of both temples. It is not severe, and lasts only a very short time. I am feeling very well and am gaining in weight." I have not heard from the patient since this date, but Dr. Wieder informs me that the good result thus far recorded continues.

In the present instance we have, in the first place, an unusual scotoma, which almost disappeared within ten days after the treatment of the posterior ethmoid had made good progress, and the abscess cavities at the roots of the incisor teeth had been drained. Which of these two local areas of infection was the more potent it is difficult to state, but it would seem that the teeth cannot be held entirely blameless, inasmuch as the rapidity of the cure was especially marked after their removal. We know from many observations, especially those of Onodi, of the close relationship of the optic nerve to the posterior ethmoidal cells, and that the thinness of the intervening wall renders involvement easy, even easier, it is probable, than in the case of the sphenoid, which anatomically may come in close relationship with the nerve and form the inner wall or lower and inner wall of the optic canal. Birch-Hirschfeld has demonstrated that the nerve lesions in central amblyopia of sinus origin consist in edema and later of proliferation of the glia cells and destruction of the nerve fibers. These he attributes to venous stasis and to toxic agencies.

As is well known, in pituitary body disease scotomas are not infrequent, and many of these have been put upon record by Uhthoff, Marlow, Doyne, Zentmayer, Cushing, Holloway, myself and other authors. To attempt to place, as Holloway and I have pointed out,[1] the probable situations of the lesions in these circumstances, that is to say, the lesions which these scotomas interpret, would be a piece of guess-work, except in a few instances. Thus, in all probability, the bitemporal hemiopic scotomas of pituitary body disease might be explained by assuming that a circumscribed focus of disease proceeding from the floor of the recessus to the surface of the posterior portion of the chiasm meets the crossed fibers of the papillo-macular bundle and produces such a visual field defect. On the other hand, should the lesion extend symmetrically on both sides of the posterior upper surface of the chiasm, the uncrossed fibers of the papillo-macular bundle would be affected, and binasal hemiopic scotomas would result, such, for example, as occurred in Zentmayer's case of acromegaly. But, as Bartels points out, autopsies have often failed to reveal the presence of the defect which caused the scotoma during the life of the patient. This being true, it would be difficult to locate the lesion which accounted for these crescentic homonymous scotomas which I have depicted as interesting defects in the visual fields of the patient whose clinical history I have recited. I presume it is not impossible that they were the expressions of a left optic tract lesion, which, had it progressed, would have produced a complete right lateral hemianopsia, just as the comparatively small bitemporal hemiopic scotomas in pituitary body disease are often the forerunners of a total bitemporal hemianopsia; but the shape and position of the scotomas militate against this theory.

As is well known, certain scotomas have been attributed to a central (cortical) lesion, a lesion which in the present instance I think must be excluded. One other explanation is permissable, namely, that these crescentic defects represent parts of ring-shaped scotomas; the left half of each ring either did not develop, or the ring originally having been complete, the left segments had disappeared before the time of examination owing to a partial subsidence of the lesions. These so-called ring-shaped scotomas have been reported in connection with ethmoiditis and sphenoiditis on several occasions, and I myself have placed one case upon record.[1] If this hypothesis is accepted, it must be assumed that the optic nerve fibers of the intermediate zone were affected, because usually annular scotomas depend upon the presence of chorio-retinitis, and there were no ophthalmoscopic signs of this disease. Such an origin of ring-shaped scotomas has been advocated, for example, by the late Dr. Swan M. Burnett. None of the explanations advanced is satisfactory, and it is more or less idle to speculate upon the exact localization of the lesion. This much may be said, namely, that the bacterial elements or toxins which caused it originated in the ethmoidal disease and oral sepsis. The source of infection was removed by appropriate treatment, and the eliminative measures were responsible for the disappearance of the formed lesion and the restoration of the visual function.

---

[1] Journal of the American Medical Association, Sept. 21, 1912, Vol. LIX, p. 1041.

INTRANASAL DRAINAGE OF THE LACHRYMAL SAC—A SIMPLE METHOD.

BY

J. A. PRATT, M.D.,

AURORA, ILL.

Excision of the lachrymal sac, with its loss of conjunctival drainage, never appealed to me, although I have given some study to the subject, particularly under Meller of Fuchs' Clinic. The retention of the regular toilet of the eye to remove the accumulated mucus and dirt, to say nothing of the other objections, is sufficient reason to avoid removal of the sac.

The intranasal drainage of the sac places the eye in the only logical position to utilize the normal drainage of the conjunctival space, and the man who suggested this certainly made a tremendous stride in the right direction, for he may have made it possible to relieve nearly all the ills of the lachrymal sac.

The West and all other operations that establish drainage into the nose intranasally, fulfill this requirement, but they are difficult to do. It is a simple, easy method that I wish to present for your consideration.

---

[1] "Some Observations on the Ocular Lesions of Sinus Diseases." Transactions of the American Ophthalmological Society, 1910.

About sixteen years ago, while attempting to probe for a lachrymal stenosis, I pushed my probe through the nasal wall of the fossa lachrymalis into the nose. I sent the patient home to have the hole heal so I could probe the lachrymal canal. She returned in about two weeks and asked for her bill, stating that she was entirely free of the running tears. This was the time that opportunity knocked at the door, but found "nobody home," and only until recently did I realize that I had established a drain into the nose. Those present who have had persistent external fistula of the sac know how easily this opening will remain patulous by the continual flow of tears and discharge.

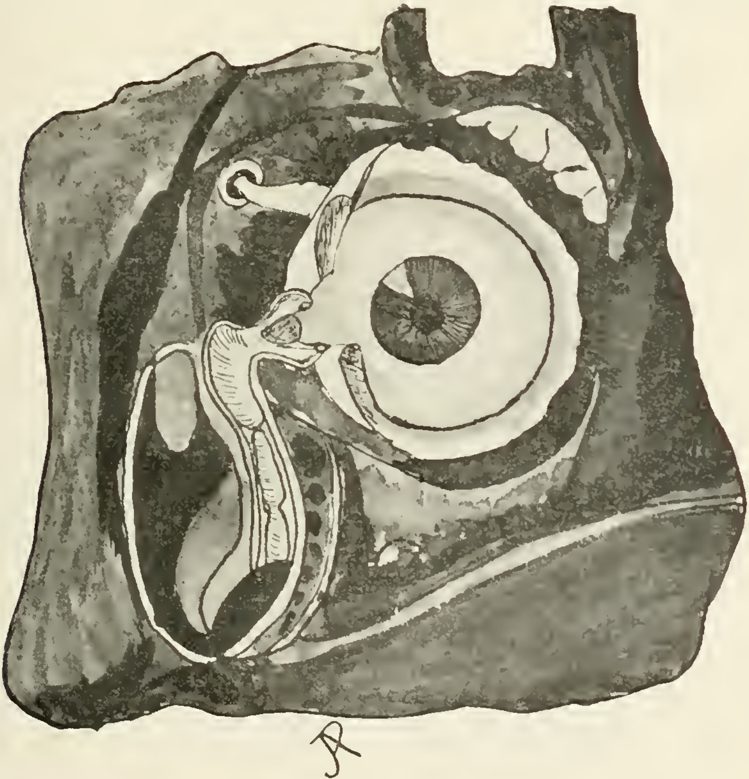


Fig. 1. Showing relative anatomy of parts. The small amount of tissue between the sac and the nasal cavity, which is destroyed by the burr.

December 1, 1914, I operated on W. B. for a purulent dacryocystitis of one year's standing, which had been treated by one of our specialists with the usual routine of probing and washing. The sac was opened and an antrum trocar was pushed through the nasal wall of the lachrymal fossa. Pus disappeared from the conjunctival sac, and has not been present since, although the eye shows tears standing in it. The inflammation and disagreeable sensation are gone. This showed the benefit of surgical drainage.

A few words in reference to the anatomy will hardly be out of place. In examining a bony specimen, we see that the lachrymal fossa is made up of the papery lachrymal bone and the ascending process of the superior maxilla. The anterior edge of the fossa is a continuation of the orbital edge, which gives us a landmark that is easily felt with the finger, so the fossa is readily located. On the nasal side we find a slight swelling in the bone just in front of the middle turbinate, which we see is caused by the slight projection of the fossa into the nasal cavity; by holding the specimen to the light we

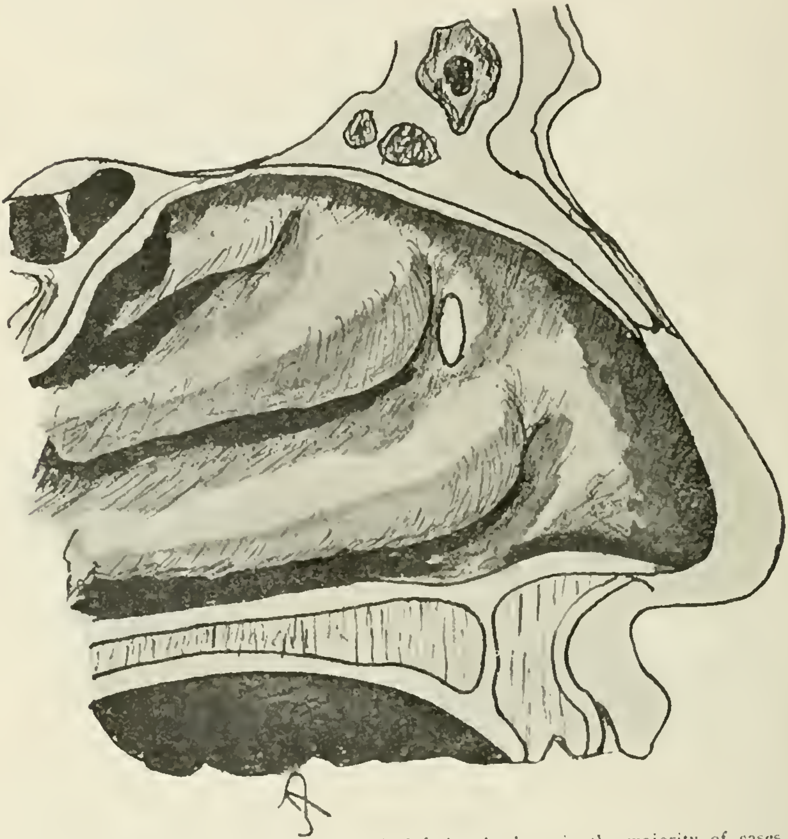


Fig. 2. Showing the position of the hole left by the burr in the majority of cases.

will see that the superior edge of the fossa is about even with the attachment of the middle turbinate, and that the bottom of the fossa is about level with the lower edge of the middle turbinate. This slight projection is the part chiseled off in the West operation, or burred off as recommended by Dr. Brawley, and is the point where the opening comes in the operation I wish to present to you.

In the West and other intranasal operations on the sac, you first destroy the muco-periosteum, the bony wall of the fossa, and then open the nasal portion of the sac. In this simple method the action is just reversed, but of course the result is just the same.

Those who are not trained to the use of the burr in their work do not realize how hard it is to cut soft tissue unless it is held against something hard. For instance, you can remove the bony covering of the lateral sinus without injuring the sinus wall, so in using the burr in the lachrymal sac it only cuts where it is held against the bony wall.

Instruments:

A canaliculus knife.

A No. 13-14 Theobald lachrymal probe.

A dental or bone engine with right-angle handle.

* Two burrs of 32 mm. length, with cutting portion 2 mm. and 3 mm. in diameter and 6 mm. long, same to cut on end as well as side, and to project 19 mm. from handle. 2 mm. and 3 mm. round burrs, same length.

A septum clamp patterned after Beck's, but made lighter in weight, the blade to be 60 mm. long, 11 mm. wide at tip, 7 mm. wide at handle, and meeting the handle at an angle of 35°. However, the last can only be used when the septum is practically straight. A substitute is a piece of block tin and an artery forceps, and a septum shield can be cut and shaped to fit a septum of any size and shape, but, of course, is not self-retaining.

Technic.

We take for granted that all instruments are sterilized and that all of the rules of asepsis are strictly complied with.

---

*The burrs were made by the Frame Dental Company, of Chicago. The septum clamp by F. A. Hardy & Company, Chicago. The attachment to my bone engine was made by the Victor Electric Co.

The operation can be done under general anesthesia, or under cocain anesthesia.

Under cocain anesthesia the same technic is used inside of the nose as in resection of the septum. The eye is cocainized and both puncta dilated and canaliculi probed to the sac. The sac is now injected with 10 per cent cocain in epinephrin. If both canaliculi are patulous and neither has been cut, it is preferable to use the upper, as the healing leaves the upper part of the lachrymal apparatus in its normal condition. If the lower has been slit, the opening into the sac can be enlarged from the old cut.

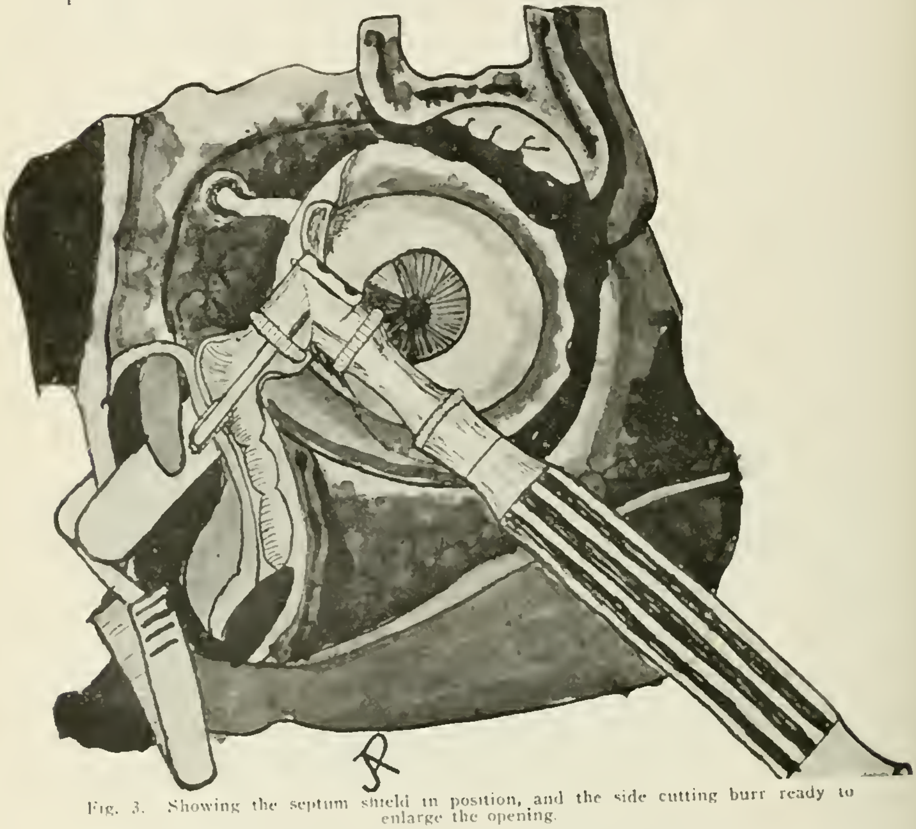


Fig. 3. Showing the septum shield in position, and the side cutting burr ready to enlarge the opening.

A canaliculus knife is now passed through the upper punctum down to the bottom of the sac, the handle is now turned down and an opening made in the upper part of the sac at least 5 mm. long, so that a No. 14 Theobald lachrymal probe can be passed to the bottom of the sac.

The cotton is now removed from the nose, and the nasal clamp is placed so as to protect the septum from the burr. The burr (round, 2 mm. or 3 mm.) is now passed to the bottom of the sac and the shaft of the burr at 45° and pointing toward the opposite side of the chin. The engine is now started and by gentle pressure a hole is burred into the nasal cavity. Changing to the side-cutting burr, the hole is now enlarged up and down, to a size 8 mm. by 6 mm. The burr should never be placed or removed while in motion. The nose is now inspected and any shreds are nipped off with the cutting forceps.

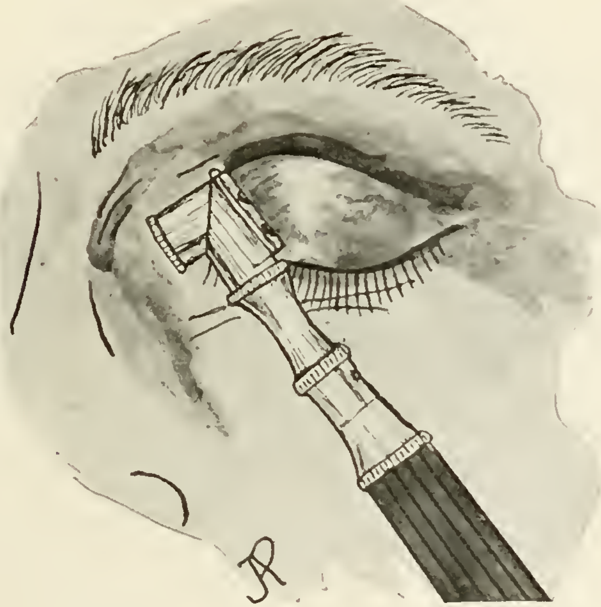


Fig. 4. Showing position of dental handle, the right angle allowing it to pass under the brow.

The sac is washed out, clots removed and a superficial suture is used to close the cut in the sac. Unless there is infection it is not necessary to wash the sac until the wound in the upper part of sac is healed, and then but a few times.

Before closing the sac it is well to feel with a small curette if there are any diseased conditions, and if so, act accordingly. I always flush the eye with a 40 per cent argyrol solution before closing the sac.

This method could be used in combination with the West operation, in this way: After the muco-periosteum has been removed then continue the operation through the external route with the burr as above described. In this way the hard part of the West operation, which is the removal of the bone and cutting into the sac, is avoided and would greatly simplify the West operation. The next case I have that is suitable for a West operation, I shall perform in this manner.

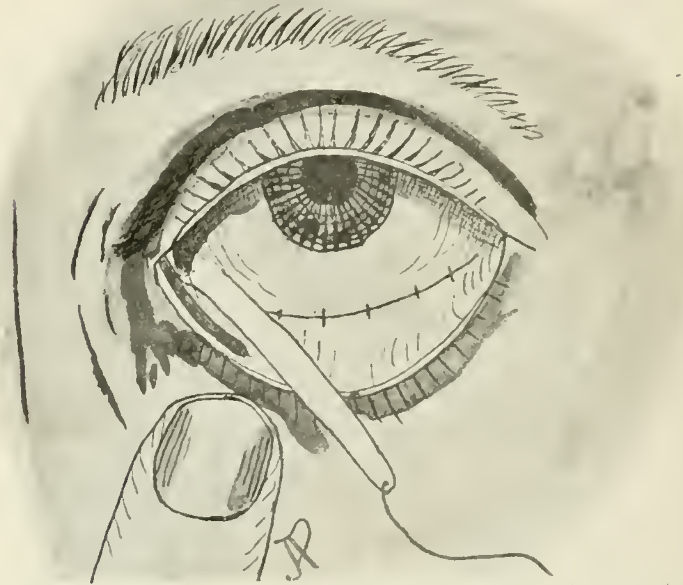


Fig. 5. The strip of mucous membrane free, wound sutured, and opening into the nose made, in restoration of intranasal drainage after excision of the lachrymal sac.

The logical reasoning following the simple method to establish intranasal drainage of the lachrymal sac turns us to whether it would not be possible to re-establish intranasal drainage after the lachrymal sac has been removed, if intranasal drainage proves itself.

It has always impressed me that the condition nearest the normal is the best for the individual concerned.

I would suggest the following technic: General anesthesia would be preferable, to avoid swelling. An incision would be made just inside of the lower lid, from a point a little above the center of the internal canthus to a little past the lower punctum, down to the bone of the lachrymal fossa. The knife is now passed down to the bottom of the fossa, with the cutting edge toward the nose, the handle brought down, and so cut the tissue in the fossa to the bone. The fossa is cleaned as much as possible with Freer's sharp elevators. The burr is now used to make an opening into the nasal cavity about the size of a No. 14 Theobald probe.

A strip of mucous membrane is now dissected from the lower fornix, from the temporal side to the internal canthus,

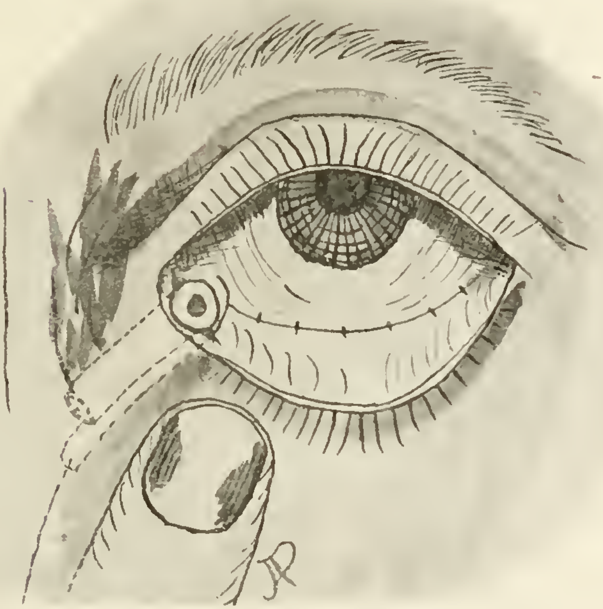


Fig. 6. Showing completion of operation for re-establishing intranasal drainage after excision of the lachrymal sac.

but allowing it to be attached at that point. The wound is now sutured and a suture fastened to the end of the mucous membrane strip. This strip is now passed into the nose through the hole previously made, and the suture anchored to the outside of the nose. A metal canula with an enlarged head about the size of a No. 12 Theobald probe and 19 mm. long would be passed into the oculo-nasal opening to keep the hole open and the mucous membrane in position until it grew in place, when the opening would remain patulous.

Cases: To date I have performed seven of these operations, which were as follows:

Case 1. The seven-year-old boy on whom I did the simple puncture December 1st was operated on January 5th, and a style left in place. At this date no tears accumulate in the eye and the eye is free from inflammation.

Case 2. Mrs. S., age 68. Has had weeping left eye for nearly fifty years. Patient has had nose broken, which is strongly deviated to the right, and the deviated septum so completely fills the left nostril that there was difficulty in passing the thin block tin for protection. There was practically no sac present, so it was necessary to cut through the tissue down to the wall of the fossa. A style was left in place. There was considerable ectropion of the lower lid at the time of the operation, January 11th, which has practically recovered at this date. Local anesthesia.

Case 3. Miss S., age 49, was operated January 25th, with phlegmon present. The patient had not slept for two nights, and the swelling was about the size of a large white cherry. The patient was seen for the first time five days after the operation, and then one week apart. The induration has nearly all disappeared and drainage seems perfect. This patient has had indurated swellings in the corner of the eye for the past six years. General anesthesia.

Case 4. Miss H., Minneapolis. Patient has worn a style for some time. The operation was performed under cocain January 31st. The attending physician reports that the drainage is O. K.

Cases 5 and 6. Mr. M., Hutchinson, Minn. This was a double chronic dacryocystitis of years' standing. In June, 1912, I re-established drainage by probing and styles, which was satisfactory until the patient allowed it to lapse. On February 1st I operated on both sides under local anesthesia, and the patient writes me the following: "Not a drop of matter runs from my eyes up to date. I was out a good part of the day in the bright sun and it took no effect whatever." This patient left for his home a few hours after the operation and has had no attention except what he can give himself.

Case 7. Mr. G., Minneapolis, Minn., has had dacryocystitis for some years in the right eye. There was ectropion of the lower lid and an external fistula of the lachrymal sac. The attending physician writes me after ten days that the patient is doing well.

AQUEOPLASTY; OR THE ZORAB OPERATION FOR GLAUCOMA.*

BY

CASEY A. WOOD, M.D.,

CHICAGO.

About four years ago, Mr. Arthur Zorab of Southampton, England, conceived a plan to insure effective and continued drainage of the anterior chamber by inserting a loop of silk into it, bringing the cut ends through a scleral or sclero-corneal opening and imbedding the threads beneath the conjunctiva.

The writer had an opportunity of seeing, in Oxford last year, several cases operated on by Mr. Zorab, and of hearing them discussed by members of the Ophthalmological Congress.

The length of time that had elapsed since the operation in these patients varied from three years to three months. In every instance the tension of the eyes operated on, the central and peripheral vision and the progress of the case appeared to be entirely satisfactory. Each patient stated that his eyes had, since the operation, been free of irritative symptoms and that the vision had either improved or had been no worse.

While the cases so far reported are numerically insufficient to make a profitable comparison of the merits of this procedure with the Elliot, Lagrange or other operation, the status of which is now definitely known, yet the experience of Zorab as well as the character of the operation appealed to the writer sufficiently to induce him to attempt it in three cases of absolute glaucoma—in eyes which, of course, are blind.

Two of these (private) patients have kindly come here tonight for exhibition.

The following is a brief history of the first case: Miss M. L., aged 71, school teacher, never had, apart from a myopic astigmatism, any particular trouble with her eyes until 18 months ago, when she found her vision failing for both distance and near. About that time she discovered, quite accidentally, that the sight of her left eye was very poor. On being closely questioned, she remembered having had several attacks of transitory "inflammation" in the left eye. For three weeks previous to the first examination she also noted a distinct failure of vision in the right, or better, eye.

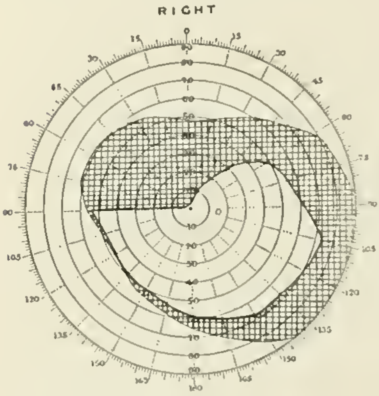
---

*Read before the Chicago Ophthalmological Society Feb. 15, 1914.

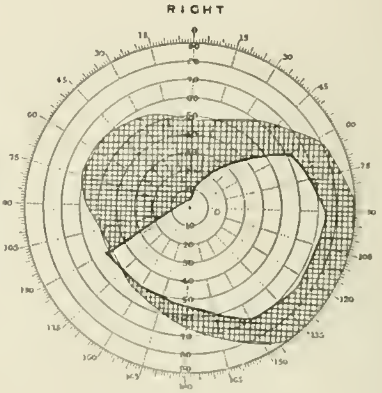
The patient's health has always been good; she has especially been free from "gout, rheumatism or indigestion."

Both eyes were found to be the subject of a chronic glaucoma. The tonometer and finger pressure showed markedly increased tension in the left eye; less marked in the right. The appearances in the left eye showed tortuous fundal vessels, deeply excavated discs, shallow anterior chambers, dilated pupils, sluggish pupillary reaction to light—all more marked in the left eye than in the right.

The right eye showed the usual defects in the fields, although the ophthalmologic findings were less marked. Vision in the left eye was "shadows" only; in the right (with correction) 20/100 and Jaeger 6.



Case 1. Chronic simple glaucoma.
Oct. 31, 1914.



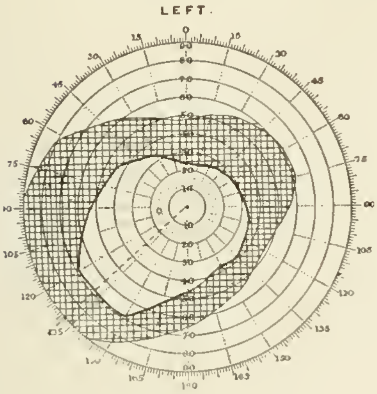
Case 1. Chronic simple glaucoma.
Jan. 16, 1915.

The patient was advised to have an Elliot operation on the right, or better, eye and a Zorab on the blind left eye. After some preliminary treatment, including the use of eserin, this was carried out, the former November 5, 1914, and the latter November 12, 1914, i. e., about three months ago. The recovery from the operations was uneventful in both eyes; and vision in the left eye has improved to finger counting at 3 inches, and while central vision in the right eye has not increased for the distance, the patient is now able to read Jaeger 2.

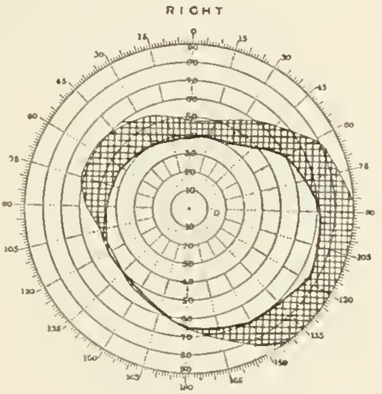
Herewith are copies of the visual fields for form in the right eye before and after the operations, the first one having been measured before the operation, on October 31, 1914, and the other after the operation, on January 16, 1915.

This result may be regarded as good, especially in view of the fact that the patient, on January 9th, hit her left forehead with great force on a chair, an accident that resulted in a hyphemia in the blind eye four millimeters high, followed by a rise of tension and more ciliary congestion. Under dionin and other local treatment the blood has entirely absorbed and the accompanying congestion disappeared. When last tested, the tension in the left eye had almost, if not entirely, decreased to normal, although slight fibrinous remains of a clot can be made out in the locality of the silk loop.

The second case-history reads (in abstract) as follows:



Case II. Chronic simple glaucoma.
Dec. 10, 1914.



Case II. Chronic simple glaucoma.
Dec. 10, 1914.

Mrs. M. R., aged 77, came with a history of good eyesight until two years ago, when her oculist discovered that her left eye was practically blind. He treated her for this condition and the vision improved somewhat. More recently she had attacks of pain in her left eye not dependent upon close work. Upon these occasions both eyes were watery and subject to photophobia. Her general health has not been very good for several years past, during which she has suffered from "rheumatism."

On examination, the left eye was found to have vision of 10/200 and no Jaeger—not improved by lenses. The vision in the right eye was 20/70, improved to 20/40 and Jaeger one, slowly. The tension in each eye was found to be +1; pupils slightly dilated and reacting sluggishly to light. The anterior chamber in each eye is shallow and, on dilating the pupils with euphthalmin, both lenses are found to be equally affected with a number of diffuse, striated opacities. The fundus vessels are the subject of angiosclerotic changes. There is venous but probably not arterial pulsation on both sides, and well-marked atrophy of disk in the left eye; less marked in the right. Both nerve-heads are plainly excavated.

The mydriatic which, following Edward Jackson's suggestion, the writer sometimes uses for diagnostic purposes in doubtful forms of glaucoma, in half an hour raised the tension in both eyes to quite +2. It fell to nearly normal under the influence of massage and eserin ointment. On December 17, 1914, Zorab operation was done on the left eye and an Elliot trephining operation on the right. Healing proceeded without incident in both eyes, except that quite recently the patient had had a conjunctival infection of the left eye. When she was last seen this had practically disappeared. Upon that occasion the tension in both eyes was normal and, most satisfactory of all, the central vision of the poor eye had improved to 20/200 and Jaeger XII; in the left eye vision had risen to 20/25+ and Jaeger I. There is a small hernia of the iris in the right eye, a circumstance which may be regarded as rather helpful than otherwise to a continued decrease of tension.

The edema or filtration areas in all four eyes seem satisfactory.

The operation of aqueoplasty as performed by Zorab consists in making, preferably at the insertion of the superior rectus, a sort of preliminary tunnel beneath the conjunctiva to the sclero-corneal margin, somewhat like the preparatory flap in the Lagrange or Elliot operation. A keratome is then passed into the anterior chamber and slowly withdrawn. A loop of wet, sterile, number one, braided white silk thread about half an inch long is then introduced, by means of a special modified iris forceps, into the chamber through this opening. Careful withdrawal of the forceps leaves the loop of silk plainly lying on and extending half way over the iris of the medium-sized pupil. The margins of the conjunctival wound are then stitched together.

The only modification the writer has to suggest in the technic of this operation is, perhaps, of some importance, because it lessens the difficulty of introducing the loop of silk. Instead of cutting the suture of the length that is to be preserved *in situ*, the suggestion is to make the silk ends quite long, that the loop be first introduced and the suture cut off to the required length just before the conjunctival wound is stitched. While the introduction of the silk is quite easy, the subsequent withdrawal of the forceps without disturbing the position of the loop is not always readily accomplished. This is all the more true if there has been any post-operative bleeding, and unless the incision with the keratome has been properly placed. Indeed, for this and other reasons this operation is quite as difficult as, if not more so than, the majority of the newer operations for the relief of glaucoma.

In passing, the writer would like to add that he prefers, in operations on the non-inflammatory forms of glaucoma, to use local anesthesia—generally a mixture of holocain, 1 per cent, and cocain, 4 per cent, with adrenalin—and to give the patient, half an hour before beginning the operation, a full hypodermic dose (usually a quarter of a grain) of morphia.

Once properly carried out, the procedure is not followed immediately or, as far as observed, later, by irritative symptoms or by inflammatory reaction. The healing takes place quite readily and the effect upon the tension of the eye continues to be quite marked.

Whether the silk loop will, acting as a foreign body, be productive of iritis or sympathetic ophthalmia or whether it will fail to perpetuate in a satisfactory manner the drainage which it undoubtedly establishes in the first instance cannot, of course, be determined in a day; nor can one regard the results so far obtained by the few operators who have done this operation as sufficient evidence of its value.

It will be noticed, quite plainly in one and to some extent in the other of the patients here exhibited, that the silk loop interferes somewhat with the movements of the iridic fibers (consequently with the shape of the pupil) in the neighborhood where it lies.

When the eye to be operated on is markedly congested there is likely to be considerable hemorrhage either into the subconjunctival tunnel or anterior chamber, or both, in which case it may be difficult or even impossible to introduce the silk loop with precision. In such cases it will be better to abandon the operation for the time being or substitute some other procedure. As before stated, the writer is not yet in a position to advise this operation in cases where the eyesight of the patient is at stake. It is for this reason that he has so far confined aqueoplasty to practically blind eyes.

RETAINED SILK-THREAD OR "SETON" DRAINAGE FROM THE VITREOUS CHAMBER TO TENON'S LYMPH CHANNEL FOR THE RELIEF OF GLAUCOMA.*

BY
DERRICK T. VAIL, M. D., F. A. C. S.
CINCINNATI, OHIO.

Now that drainage from the intraocular chambers to conjunctival spaces by means of silk thread left *in situ,* as a means of combating certain forms of glaucoma, as shown by Dr. Casey Wood in his admirable presentation of Zorab's operation before the Chicago Ophthalmological Society, February 15, 1915, is attracting some attention, I may be pardoned for reportng a somewhat similar operation of my own done in 1907.

Mr. S. J. R., 75, consulted me on June 17, 1907, on account of blindness and pain in his right eye.

The history in brief, was, that three months before, he was seized with severe pain and inflammation of his right eye, soon followed by total blindness. One month before I saw him, he called on another physician, who diagnosed glaucoma and advised enucleation.

Stat. Prae.: Pupil dilated and irregular from posterior synechia. Deep ciliary injection of the "left over" type from fulminating glaucoma. Anterior chamber partly filled with blood and the posterior surface of the cornea shows blood stain.

Vision: *Nil.* Tension plus 3 (we had no tonometer then).

Diagnosis: *Glaucoma Absolute.*

June 20, three days later, I applied an aseptic silk-thread seton to drain the eyeball in the equatorial region. The idea was to simulate a permanent posterior sclerotomy or to afford a permanent drainage from the vitreous chamber to the space enclosed by the capsule of Tenon. The operation was very simple. A full-curved, sharp, short and broad needle armed with No. 10 black silk plaited thread on the "whip cord" order, was passed through the conjunctiva in the equatorial region of the eyeball in the lower outer aspect of the globe, made to pass a short distance (about 10 mm.) under the episcleral tissues, then boldly through the sclera in the region of the ora serrata through sclera, choroid and retina quite well into the vitreous chamber and then passing out again through these tissues to emerge so that the space between the scleral openings was about 8 mm. in length. The needle was then reintroduced through the emergent conjunctival opening and allowed to glide backward under the episcleral tissues for a distance of about 10 mm. before final emergence. The thread was drawn so that the end just disappeared in the entrance of the conjunctiva and clipped so that the other end disappeared in the place of final emergence and this loop of coarse thread with its two ends leading from the vitreous chamber into Tenon's space was left to "drain" the hydrops of the vitreous if it would do so.

---

*Read before the Chicago Ophthalmological Society, February 15, 1915.

I watched the results of this operation from day to day with some misgivings, for I had some doubt of its being adequate to meet the needs of a plus 3 tension. And as the patient realized that it was this or enucleation, he too awaited the result with some interest. There was little or no reaction from the operation itself and no evidence of hemorrhage. The tension was relieved at once and remained so. All signs of redness disappeared in a short while and the hyphaemia likewise disappeared. I watched the eye for three months and finding the result permanent and desiring to get rid of that thread, which I feared to allow to remain with the patient away from my observation, I decided to remove it. This I did on September 19, 1907, three months after its insertion.

I next saw the patient April 16, 1908, ten months after the operation. The note in my case book is short and convincing: "Tension normal."

My partner, Dr. F. W. Lamb, who assisted me in the operation and saw the patient with me, for we both watched the case with much interest, remembers the case well. Dr. Lamb states the man had no return of glaucoma up to the time of his death some two years afterward.

I never repeated the operation, for I confess I feared it might be considered dangerous practice, for such a thing as leaving a permanent stitch in the eyeball was unheard of at that time, but now that the measure is being recognized as being valuable and safe, I feel that my experience is worthy of bringing to your attention. I wish particularly to call attention to the greater advantage to the patient in having the drainage lead into Tenon's capsule, where there exists a large anatomical reservoir with backward flow of lymph as compared with the thin conjunctiva near the cornea, poorly supplied with efferent lymph channels of any size in comparison, and to point out the element of safety in post-operative infection as compared with subconjunctival drainage at the limbus.

CONCERNING TWO EXAMPLES OF "A PECULIAR FORM OF RETINAL PIGMENTATION" (STEPHENSON).

BY

BURTON CHANCE, M. D.

PHILADELPHIA.

Illustrated by a colored (frontispiece) plate.

In 1891, Stephenson exhibited before the Ophthalmological Society of the United Kingdom, four cases of "A Peculiar Form of Retinal Pigmentation." He stated, in his report, that he had met with three cases only of this description in an examination of 2,500 eyes, and he was inclined to regard the condition to be commoner than might be inferred from the scantiness of the literature existing at that time. I have seen only four examples like those he showed, in all the years of my experience. The first by the kindness of Dr. Posey, which case, I believe, occupies a somewhat unique position, inasmuch as the sketch made of it was the first drawing of a fundus made by Miss Margaretta Washington, one whose artistic skill has done so much to enrich the literature of American Ophthalmology. The second was under the observation of Dr. Zentmayer. The third and fourth occurred in my own practice; one of which I wish to describe in some detail, and herewith exhibit a drawing of it, which drawing also was made by Miss Washington.

The first case was noticed in the left eye of a boy of 10, who was sent, with a number of boys in October 1910, for a routine examination of their eyes, by the Master of a School with which I am connected. For obvious reasons I could not arrange for an extensive study of his eyegrounds, but he was examined again two years later on entering a higher grade. He has removed to a distant city so that I have no further note of his case.

In the upper nasal section of the fundus of the boy's left eye, there were a number of groups of spots which extended far forward to beyond the equator. The spots were intensely black, and when seen two years later they had not changed.

At the first time the boy was seen, he had full visual acuity and he was entirely without other visual symptoms. The second time there were signs of disturbance of the retinochoroid associated with low-grade, uncorrected, hyperopic astigmatism. There was an unusual arrangement of the upper vein; the central trunk extended but a short distance on the surface of the quite broad cup, before two main divisions occurred, and then, within the circle of the disk, many drooping twigs were given off to the temporal and nasal regions. The artery came out of the substance of the papilla near the edge of the disk. My notes state that "the congenital pigmentations are like those in Frost's Atlas, but broader, more extensive, and more numerous than those in Posey's and Zentmayer's cases."

The other case was found in the left eye of a young man who had received cerebral concussion during a coasting accident in February 1914. The vision of his right eye was disturbed by subretinal edema, which did not subside for several months, and a central scotoma remains.

There were no symptoms in the left, the visual acuity equalling 5/5, and the field was regular in outline but somewhat reduced in area; there were no scotomata, however, and the color sense was normal and prompt.

The ophthalmoscopic appearances were remarkably like those described by Stephenson, and shown in Vol. XI. of the Transactions of the Ophthalmological Society of the United Kingdom and of the same cases in Frost's Atlas, as well as Jaeger's case, and another by Leopold.

Occupying the mid-temporal sector, in the space between the superior and inferior temporal vessels, and extending from the maculo-papillar region to far forwards beyond the equator were groups of chocolate brown and black spots, varying from the minutest sizes of two or three mm., or more, their diameter being less than that of the largest retinal vessels. The smallest spots were in the circum-macular region and the sizes increased until the largest at the extreme periphery. The spots were neither round nor square, but more or less angular and irregular in outline. They were arranged in groups, which assumed various shapes, some circular, or oval, or like a rosette figure with the center free from visible pigment. Finer groups assumed the position of chains of diplococci, others lay isolated. The choroid and retina between the groups and between the spots were normal in appearance, and, as in the previously published cases, the spots here and there covered over the retinal vessels, while the greater number were beneath them. Most of the pigment collections, therefore, appeared to lie deeper than the retinal vessels. The individual spots and the collections were entirely without halos, or areas of degeneration about them. They were, on the contrary, sharply limited, and each spot and each group of spots had a well-defined outline; neither did the spots coalesce.

The nasal half was entirely devoid of spots, neither were there any other pigment aberrations perceptible.

Just as Stephenson thought of his cases I do not believe these cases here reported, to be instances of retinitis pigmentosa, but Jaeger thought his case was. Yet it is only a year ago since that which I have detailed first came before me, a period too short to make it hardly possible to be certain that the condition was not a later stage of an earlier degenerative process. I have classed the spots as congenital pigmentations and a point in favor of such an origin, is that there are no such signs whatsoever in the right eye of either person that could be detected after repeated study.

235 South Thirteenth Street.

THE SPECIFIC TREATMENT OF MORAX-AXENFELD CONJUNCTIVITIS.

BY

HARRY S. GRADLE, M. D.
CHICAGO.

In the Muenchener Medizinische Wochenschrift of September 29, 1914, WOLFF of Amsterdam published the results he obtained from the use of the fluorescin-zinc compound that he discovered. This reddish-yellow powder is produced by the double transposition of potassium fluorate and zinc sulphate. It is soluble in water only in a one to one thousand solution and contains 15.8% of zinc. Experimentally a 1-10%

solution has a higher bactericidal power than zinc sulphate or any of the astringents in common use.

Wolff treated 10 cases of true Morax-Axenfeld conjunctivitis by dusting this powder onto the conjunctiva and following with a light massage. Every case was cured (I use the word advisedly) by a single treatment.

As soon as I was able to obtain the compound, I began to treat cases of true Morax-Axenfeld infection of the conjunctiva with it. The best results seemed to follow a light dusting of the powder onto the lower tarsal conjunctiva with a cotton-wrapped applicator, with which a light massage is made. The powder forms a thin continuous film over the conjunctival surface and is gradually absorbed by the tears. This keeps the infected areas bathed for about 24 hours in a one to one thousand solution of fluorescin-zinc that possesses a decided bactericidal action. Armed with the knowledge that the diplo-bacilli lie superficially (never being found below the second layer of epithelial cells), it is easy to understand the almost magical effect of this compound.

Thus far I have treated 15 cases of true Morax-Axenfeld conjunctivitis of varying degrees of severity. With but few exceptions, one treatment was sufficient to cause a complete disappearance of all the organisms and their accompanying pathological manifestations. A few cases required a second application of the powder. But even more wonderful results follow the use of fluorescin-zinc in those persistent cases of low-grade, non-purulent blepharo-conjunctivitis with a multiplex bacteriological flora. In three cases of this type, three applications of the zinc compound sufficed to cause a complete disappearance of all pathological manifestations.

A few hypersensitive patients object to its use. During the first half-hour following the application, there is a sensation of "sand in the eye," accompanied by a slight burning. For the succeeding twenty-four hours, such tears as appear, are discolored to a yellowish-green tint, which color is seen on the lid margins. Beyond these minor irritations, no objections have been raised to its use. As one patient remarked, "To one who has taken methylene-blue, green tears are no objection."

REPORTS OF SOCIETIES

ROYAL SOCIETY OF MEDICINE—SECTION OF OPHTHALMOLOGY.

MR. PRIESTLEY SMITH, F. R. C. S., *President.*

WEDNESDAY, DECEMBER 2ND.

Miss Rosa Ford showed a case in which an eyelash pierced the lid border backwards.

Sir Anderson Critchett showed a patient with small optical iridectomies in a case of lamellar cataract. He described the operation, which was initiated by his father fifty years ago, and narrated cases so treated in which the result was permanent. Mr. W. H. Jessop spoke favorably of the procedure, which he had himself carried out with great success, in adults as well as in children. In one case, operated upon twenty-two years ago, the result was as good today as at the time. Dr. Angus MacGillivray (Dundee) said he had done the operation described several times. The results by removal of the lens were not as satisfactory in lamellar as in other forms of cataract.

Mr. Leslie Paton showed a case which he regarded as Mikuliez's disease, and gave his reasons for the view. Col. R. H. Elliot referred to a case of the disease which he published in "The Ophthalmoscope"; that of a Hindu woman, aet. 49, in whom the lachrymal glands on both sides bulged like short horns, and the accessory portions of these glands projected into the conjunctival sac. The parotid, sublingual and submaxillary glands showed fullness. Removal of the lachrymal not only improved the appearance, but was followed by subsidence of the other glands. The tissues removed presented a close resemblance to the appearance of round-celled sarcomata.

Mr. Robinson exhibited a case of irido-cyclitis, and Mr. Eason one of bilateral temporal hemianopia, to illustrate the importance of taking the fields of vision in every case of optic atrophy. The patient, though he had seen many ophthalmic surgeons, became so blind that he had to be led about. His fields had not then been tested. He could make out moving objects and lights on the nasal side only. The onset of blindness within six months was unlike the history of the optic atrophy of tabes, and Mr. Eason thought he might have pituitary tumor. Within a month of taking thyroid he got remarkable improvement of vision. He still took the extract, for if he went long without it he noticed a relapse. The sella turcica was somewhat enlarged.

Mr. Holmes Spicer showed a case with angeoid streaks.

The president made sympathetic reference to the death on the battlefield of Mr. Angus Macnab, an active member of the Section, and proposed a resolution of sympathy with his family, which was passed.

"The Necessity for an Exact Definition of Blindness."

Mr. Harold B. Grimsdale, in opening the debate, stated that the importance of defining, if possible, the condition of blindness had long exercised the minds of those concerned in the teaching and maintenance of the blind, and the recent awakening of public interest in the question made it all the more urgent to clear away doubt. On the recently appointed committee on the subject, he was the sole representative of ophthalmic surgery. He had, therefore, invited this Section of the Royal Society of Medicine to try and arrive at something like unanimity on the question. Many members of the profession whom he had asked found it impossible to define the status of a blind child otherwise than was done in the Act of 1893, namely, that for educational purposes a child shall be considered blind who is too blind to read the ordinary school books. Yet all children who did not come into this definition were not fit for the ordinary school; for instance, subjects of high myopia. It was desirable to have some rule for evaluation, as a guide, in each case. Many factors must be taken into account, and these concerned both the state of the patient and his employment. Both central acuity and the state of the peripheral vision must be considered, as well as the relative value of the two eyes, and the presence or absence of binocular vision. For certain employments a greater acuity was needed than for others. Those having no perception of light were but a small proportion of those ranked among the blind, while among children the proportion was still smaller. Among adults the blindness from optic nerve atrophy and glaucoma led to a preponderance over children. In a blind school, of sixty-eight children, eight had no perception of light. In Boston, Mass., of 2,021 eye patients, .6 per cent were totally blind, 7.7 per cent "practically blind," with a vision less than 6/60 of normal. These figures were not a guide, because totally blind persons would not seek relief. The blind persons in the United Kingdom number about 27,000, according to the census, but this could not be accurate. The ratio of the totally blind to the economically blind was about 1 to 9. The causes of economic blindness in children differed considerably from those in the adult. In the former, the chief trouble was loss of central acuity from corneal conditions, while in adults disease of the optic nerve, with contraction of the visual field, operated chiefly. There was evident a tendency to make the standard of vision too high and thus throw a large number of children into the "blind" class. One reason was that a child with bad sight demanded more individual attention from his teachers than the others, and so constituted a drag on the class as a whole. This was a stimulus to put such child into a special school. This might ensure his education being better looked after for the time, but once labeled "blind" he was liable to be drafted into a blind workshop. The co-education of the blind and the seeing was one of the most interesting experiments which had been conducted. The blind child was first started in a special school until he had mastered the elements of Braille writing and reading; then he took his place among sighted children in the universal school, and often competed successfully with normal children. The capacity to read separate letters was a very different matter from being able to read words. From experiments he found that the "near" acuity as measured by reading words was often more than twice the distant acuity measured on single letters. Often so-called blind children tried to read Braille by sight in preference to by touch. He contended that between the "blind" school and the normal school there should be a third school for children who had such visual defect that they could not be taught by the aid of the blackboard. His suggestion was that a distant acuity of 6/60 should be taken as the highest limit of vision for a blind school child. Those whose vision was better than 6/24, unless otherwise recommended by a medical man, he would send to an ordinary school. All special schools should be inspected at least once a year, and the vision of each child tested and recorded. Among the blind there would always be two classes—those who could not see at all or scarcely so, and those who could distinguish large objects and so could guide themselves by their eyes in unfamiliar surroundings. Given a good field, an acuity of well below 3/60 enabled a man to move freely in the outside world; hence he regarded 6/60 as too high a standard below which a man should be regarded as practically blind. Mr. Grimsdale then dealt with the question in relation to various trades, and in conclusion suggested the appointment of a subcommittee to deal with the question in all its bearings. It was undesirable that a bill on the subject should pass through Parliament without any reference to the opinion of that Section of the Royal Society of Medicine, for in that case most difficult questions would be left to the decision of absolutely unqualified amateurs.

Mr. Rockcliffe said that for many years he had advocated some definition of blindness. The local government board defined blindness as "Too blind, in the opinion of the local government board, to perform work for which eyesight is ordinarily required." Others expressed it as "Blind for the practical purposes of life." During thirty years he had examined and admitted into a blind school large numbers, and his decisions had not been questioned. He divided cases into (a) blind, (b) partially blind. The latter were those who were able to differentiate fingers at a greater distance than three feet. There should be a clear distinction drawn between capacity for ordinary school education and for technical education. A good, broad distinction was: Those who could count fingers at three feet, and those who could not. There should be a clear decision as to who should be participants in pensions for the blind.

Dr. Angus MacGillivray (Dundee) said that for industrial purposes so-called blind people could be divided into three classes: (1) Totally blind, those who had no perception of light; (2) practically blind, those possessing perception of light but were unable to take part in industrial occupations owing to marked impairment of vision; (3) the partially blind, whose defect prevented them obtaining employment in ordinary sighted workshops, their vision yet being such as to disqualify them from entrance to a blind institution. Thirty per cent of the inmates of blind institutions belonged to the category partially blind. He discussed the case of children, and the general question in relation to occupations.

Mr. N. Bishop Harman contended that there was only one exact definition of blindness, the dictionary one—"want of sight." But the term was used to include many varieties of partial blindness, and for those that definition was sought.

Vision was a complex act. Acuity, field, mobility, mentality, and effects of difference of lighting, habit and custom, all took a share in the sensation. It was not possible by any sufficiently simple definition to gather up possible varieties, any one of which might constitute partial blindness of serious order. Any definition must be related to the facts of life, must have reference to the person's capacity for work. If it could be certified that he was incapacitated from engaging in profitable labor by reason of his defect, his was a state of blindness. Any attempt to pass a definition of blindness drawn in professional terms, to operate through the legislature, was, he contended, doomed to failure, and was liable to be altered out of recognition. The definition in the Elementary Education Act, "Inability to read the ordinary school books used by children," was worthy the judgment of Solomon, for it defined blindness in terms of life. He pointed out the parallelism of the case of mental defectives, in which also reference was to life. He advocated a certification of blindness by two independent and duly approved medical men, who should be required to state their opinion, and the facts upon which that opinion was based; such opinion being subject to the scrutiny of the medical officer of the proper authority.

Mr. Richardson Cross (Bristol) thought the legislature was rightly attacking this question. If a child's sight was such that it could not attend the ordinary school, some other arrangement for its education must be made. There were blind schools for those nearly blind, and intermediary schools for myopes. Anything brought forward to deal with the infirmity in adults would not influence the good work being done for the children. Ophthalmic surgeons should agree among themselves as to a proper definition of a blind person. He thought it would be unsound to take the view that the layman was unable to judge on this matter. He thought the registrar would accept two classes. One would embrace those who had no more than perception of light: the other either Snellen's types or finger counting, the latter for preference. Anyone who could not count fingers at a greater distance than a yard should be regarded as practically blind. In order to be practical, he thought that at first there should be some sacrifice of scientific precision. This could perhaps be arrived at later.

Mr. W. T. Holmes Spicer contended that the persons to decide this question should be expert ophthalmologists, not lay members of a county council. Any rules arrived at should be for the guidance of expert examiners.

The president pointed out how well qualified this Section was for giving expert advice on such a matter, which was of the first importance.

CHICAGO OPHTHALMOLOGICAL SOCIETY

DR. WESLEY HAMILTON PECK, PRESIDENT.

December 14, 1914.

Dr. John R. Hoffman presented a case which showed the invariable short period of healing after an intracapsular cataract extraction. He operated on the patient, Dr. B., on the fourth instant, this being the eleventh day. A preliminary iridectomy had been done some months previously.

In the operation he followed the technic as described by Dr. Vail, of Cincinnati, with the modifications and instruments devised and used by Dr. Wlliam A. Fisher, with the departure from the latter in so far that the spring speculum was used while making the incision. The author had made it a rule to use the retractor in this step of the operation. The reason for the departure at this time was the fact that the patient did not stand the retractor well. After making the incision after the method of Smith, the speculum was replaced by the Fisher lid-hook and the author proceeded to deliver the lens according to the procedure described as the tumbler, as the lens appeared to be of the intumescent variety which readily tumbled. Placing the point of the extracting hook over the border of the lens and making pressure directly downward towards the feet, the capsule readily gave way below, and the lower edge of the lens presented in the wound first, making the delivery practically free from danger of loss of vitreous, as the upper part of the capsule was ruptured in this class after the lens was out of the wound, and the eye being turned up, there was no pressure exerted on that medium. After making the usual toilet of the wound, which consisted in replacing the pillars of the iris coloboma with the iris repositor, both eyes were dressed with yellow oxid of mercury ointment over the palpebral fissures and gauze pads and the patient was put to bed.

The patient exhibited no discomfort during his period of confinement to bed for the usual nine days.

The dressing was not disturbed until the ninth day, when on removing it the wound was found healed, and the eye presented none of the irritable conditions present in a large number of cases after the extracapsular operation. Examination of the media showed everything clear, and vision with a plus 10.00 was 20/30.

The author was convinced from the moderate experience he had had with the operation that any one who had had experience with the older methods of extraction, and desired to do it, would be successful if he followed the technic of Vail and Fisher, with an assistant who would study carefully the method of holding the lid hook.

DISCUSSION. Dr. William A. Fisher stated that the corneal wound had healed and the patient had recovered from the operation without the slightest irritation or inflammation. The eyes were bandaged for nine days after the operation, and tonight, eleven days after the operation, the patient seemed to be in a condition to be discharged. The fundus could be seen with the ophthalmoscope, and there was no capsule to interfere with his vision or cause him to return for a secondary operation. Patient's vision was 20/40 with correction and it was fair to presume that he would have 20/20 within the next two weeks.

Many operators would be glad to adopt the intracapsular operation as a method of choice provided they could safely perform it. He was pleased to know that Doctors Hoffman, Tydings, Gradle and Suker were doing the intracapsular operation, and he believed many more would be doing it in a short time, provided the technic was mastered while doing the old operation.

To remove a lens in its capsule required a perfect technic and it could be mastered by good operators, provided they adhered strictly to the Smith teaching. More losses of vitreous would occur to anyone beginning the new operation, but the absence of postoperative inflammation would more than counterbalance the trouble caused by a slight loss of vitreous. Both eyes should be kept bandaged for nine days after the operation whether the lens had been removed in its capsule or the needle had been used. In thirty consecutive operations postoperative inflammation followed only in one case, and that was one that had a prolapsed iris which recovered with 20/20 vision. He did not recommend his needle except in cases where safe pressure had been used and the lens would not move. The more expert one became the less often would he be called upon to use the needle.

Typical Albuminuric Retinitis Fundus with Negative Findings.

Dr. Michael Goldenburg presented a patient, H. W., aged 37, coppersmith helper, who came into the clinic with the history of his sight becoming hazy in the left eye. Vision in the right eye had always been bad and when hunting patient was compelled to use his left eye. Vision at this time was 10/200 in each eye. Pupils were dilated with homatropine and fundi examined. The right was found to be negative and with a high degree of hyperopia.

In the left the author found a marked neuro-retinitis with many hemorrhages which were limited to the circumference of about two diameters of the disc. The peripheral part of the fundus was free of hemorrhages; the vessels were tortuous and the veins dilated, resembling to a marked extent a mild form of thrombus of the central retinal vein. Eight days later the fundus again was examined and found most of the hemorrhages absorbed, with a beautiful stellate glistening white deposit in the macular region, a typical picture of albuminuric retinitis.

Refraction:

O.D. 10/200+6.00=+1.50 Ax. 90 20/100.
O.S. 10/200+ .75=+ .50 Ax. 90 20/100.

Wassermann negative.

Urinalysis was made five times and all were negative in every respect. A twenty-four hour specimen was used. The average specific gravity was 1020.

The ethmoids and sphenoids manifested nothing upon inspection or x-ray plate. Blood pressure, 125; heart negative; fields contracted and no central scotoma for red or green; as to the brain, there were no signs or symptoms that would suggest a brain tumor. General physical condition of patient good.

DISCUSSION. Dr. Clark W. Hawley thought that the case reported by Dr. Goldenburg was similar to two cases that he reported to the society some time ago. The description about the macula of Dr. Goldenburg's case was typical of the effect due to some toxemia. The stellate appearance of the exudate about the macula, according to the description, was perfect of the appearance about the macula of the speaker's two cases. The cause of the condition in his two cases was due to toxemia from the lower bowel. The first case was cured by an osteopath curing up a severe constipation. The second case he cured by a course of calomel. In both cases the exudate about the macula disappeared.

Some Experiences with the Intranasal Partial Resection of the Tear Sac.

Dr. J. Sheldon Clark, Freeport, Illinois, read a paper on this subject in which he summarized as follows:

What was to be expected from resection of the tear sac intranasally? 1. A functionating tear apparatus was the foremost attainment. 2. There was no possibility of an external scar, nor did the patient nor the doctor have a dread that there would be a resultant scar. 3. There was no epiphora following the operation. 4. There was no possibility of having to do a secondary operation upon the lachrymal gland on account of the troublesome epiphora. 5. Epiphora due to stenosis was readily cured by this procedure. 6. No other procedure would admit of trial in the presence of phlegmon. With the intranasal operation one might operate where there was phlegmon without fear and successfully. 7. A patient with tear sac trouble was very much more apt to accept the intranasal route than he was the external operation for the total excision of the sac.

DISCUSSION. Dr. H. W. Woodruff, of Joliet, Illinois, had seen the results in two cases operated on by this method, and said they were good in both. The first one was operated by Dr. Clark at the Eye and Ear Infirmary last June, and the other one was shown here by Dr. Brawley one month ago. Whether this operation or other intranasal operations on the tear sac would entirely supersede the extirpation of the sac externally, was doubtful.

It would probably be contraindicated in dacryocystitis with cataract as a prophylactic measure before the cataract extraction. The extirpation would be more certain of removing a dangerous infective focus. It would be an ideal operation, however, in certain cases of epiphora with stricture, but without dacryocystitis. Such cases, for instance, which had been repeatedly probed without benefit and in which the eyes were constantly suffused with tears, would be greatly benefited by this operation. He would like to see this operation tried on such cases.

Dr. F. C. Todd, of Minneapolis, said he had not as yet performed the West operation and he was waiting until he could see it demonstrated by Dr. Clark, who had accepted an invitation to come to Minneapolis next month. The operation appealed to him as a rational procedure in cases where it was indicated. He intended to give it a fair trial. He would be disappointed if it did not meet his expectations as it seemed in many respects preferable to older forms of treatment. It was distinctly an operation for the rhinologist.

Dr. Richard J. Tivnen stated that the procedures at present in vogue, for the relief of chronic interference with the drainage of the tear sac, and its associated disturbances, were far from perfect or satisfactory. The plan of the intranasal operation described by Dr. Clark which had as its basic idea the short circuiting of the duct, with the end in view of providing a functionating tear apparatus, appeared sound and scientific. The chief advantages it offered were the preserving of a drainage outlet, the avoidance of a scar externally, and its almost universal availability.

As to septal deflections, particularly those situated superiorly in the nasal fossae, they usually demanded operative correction before the operation on the duct could be successfully conducted. Since such deflections were commonly met with, this additional requisite operative interference, might militate against the popularity of the procedure.

He should be glad to know from Dr. Clark what the real practical technical difficulties of the operation were.

Dr. Frank Brawley wished to ask Dr. Clark to give the after-treatment more in detail. In the case operated by Dr. Brawley and presented at the November meeting, there had been some trouble with granulations covering the bone wound and these had been controlled with silver nitrate fused on a probe. To date, this case had shown no further evidences of pus, fluids could be syringed into the nose easily and the fluorescein test was positive, though required several minutes.

Dr. J. A. Pratt, Aurora, Illinois, heartily endorsed the intranasal drainage of the lachrymal sac. Although both times he was in Vienna he took the operative work of the excision of the lachrymal sac under Dr. Meller, he had never practiced the operation for the ultimate result of the continual toilet of the eye, and the lack of drainage of the conjunctival sac never appealed to him, and he had relied upon dilatation and the style.

Three weeks ago he did the West operation on a patient who had had unsatisfactory results with the sear, with the most happy results. The patient now was entirely free of her trouble. The operation was performed as Dr. Clark had described up to the point of opening the sac, when he found he could not grasp the sac with the West forceps. He had the assistant push out the sac with the probe as directed and then he curetted through the sac with a small sharp probe as directed.

In his opinion when we had established this short route drainage into the nose, we would cure nearly all the ills of the lachrymal sac.

Dr. R. H. Good expressed the opinion that in the near future most diseases of the lachrymal sac requiring surgery would be operated intranasally. He objected to the term resection of the sac because it was misleading, in that it left the impression that the entire sac was resected. In reality it amounted to simply slitting the sac.

In regard to the employment of morphine before operating on the nose and throat, he had abandoned this some years ago on account of the fact that the patient might have a severe hemorrhage after being placed in bed and being in a drowsy condition, swallow the blood without the nurse or the patient knowing that it was a hemorrhage.

Dr. Yankauer had brought out the point that many of the tear sac troubles were due to the closure of the nasal duct on account of the bony foramen being too small. By removing the nasal bony wall of this foramen and slitting the duct all the way up into the sac, it had given good results without the more radical procedure of resecting a part of the sac.

The use of the bur for the West operation accomplished the same results and could be much quicker and more easily performed.

Dr. Clark, in closing the discussion, stated that the operation was of the greatest value in dacryocystitis as a preliminary to cataract extraction, as well as in the other conditions named in the paper. In fact, this was one of the conditions best suited to the intranasal procedure.

As to the details of the after-treatment, there was nothing particularly different to add from what was given in the paper. Excessive granulations should be combatted here as in other nasal work.

The operation was not so highly technical, and yet it was one which should only be done by those who are accustomed to working high up in the nose. As in some other nasal operations, one should be able to "see with his fingers" as well as by the aid of direct vision. He spoke of the possibility, in some instances, of having to do more than the simple work on the floor of the sac. Occasionally a high submucous partial resection of the septum would have to be made, and the pyriform process and the anterior end of the middle turbinate would have to be resected.

As to its applicability in so-called hernias of the sac, in all this work it was simply a question of drainage, and once this was established and maintained, it was like it was in other situations in the body, in that healing took place. One of the points made was that this operation was indicated in the presence of phlegmon, or where the process had extended beyond the sac.

The Localization of Foreign Bodies in the Eye.

Dr. Hollis E. Potter stated that steel, iron, iron rust, copper, brass, cement, stone, glass and wood were the most common bodies met with. Of these, wood was invisible unless painted. Glass, stone and cement were of medium density, but were visible in any appreciable quantity. The heavy metals were easily demonstrated.

Magnetic bodies, such as iron and steel, were not infrequently shown by X-rays when negative to the magnet test. When removed by magnets, a previous knowledge of the position permitted an extraction with minimum laceration.

When sclerotomy was necessary before the extraction, accurate localization was of prime importance.

Simple plates were useless for accurate or even approximate localization. Some mechanical system must be adopted. The system as devised and perfected by Sweet was most accurate and easily used. One who did this work should localize every case he could so as to become proficient and uniformly dependable.

The author demonstrated two of the latest types of Sweet's localization apparatus. He also demonstrated several plates, lantern slides and charts.

DISCUSSION. Dr. Richard J. Tivnen stated that the value of the X-ray as an aid in diagnosis of foreign bodies involving the ocular structures was well recognized. The radiologist had perfected his technic and overcome the difficulties of localization of the foreign body to such a degree that it was now possible for the ophthalmologist to look forward with confidence in such cases for exceedingly valuable assistance from this source. The painstaking and instructive presentation of the subject by Dr. Potter deserved commendation and support.

He thought all ophthalmologists had reached the conclusion that skiagraphs of the eye, in so far as the diagnosis and localization of foreign bodies were concerned, belonged to the domain of radiology quite apart from the rest of the science, and that men who became competent in this branch of the subject should be recognized as specialists in this particular field of radiology. This being true, it would seem the part of wisdom for the ophthalmologist to support in a practical way those men who are willing to specialize in this subject and who were willing to coöperate with ophthalmologists in solving the problems which this class of cases presented.

It had been his experience that one skiagraph was oftentimes insufficient to establish a positive diagnosis, and in all doubtful cases he insisted upon at least two. Numerous experiences had shown the utter unreliability of accepting as conclusive either the statements of the patient, the presence or absence of a wound of entrance, the negative response of the magnet and even the negative x-ray plate. The average case, however, would be discovered by an exhaustive interrogation of these several clinical evidences.

In all suspected foreign body cases he had come to follow as a routine procedure, first, obtaining a complete history of the accident, with especial reference to accounting for the foreign body; second, making a thorough examination, including the visual acuity, tension, fundus, etc.; third, making skiagraphs, two or more, in doubtful cases, and fourth, applying the electric magnet.

The surgeon should learn to interpret the skiagraph himself, as such a study would well repay the effort expended.

Paul Guilford,
Secretary.

TRANSACTIONS PHILADELPHIA POLYCLINIC OPHTHALMIC SOCIETY.

December 10, 1914.

Symposium on Diseases of the Pituitary Body.

"The Ocular Symptoms."—William Campbell Posey, M. D.

Dr. Posey said that owing to the intimate anatomical relationship which exists between the pituitary body and the optic and motor nerves of the eye, the ocular symptoms are the most frequent and important of the neighboring symptoms of diseases of that body. Exophthalmus, though infrequent, sometimes occurs, and may be attributed perhaps to a lymphatic stasis in the tissues of the orbit. If there be complete bitemporal hemianopsia, the Wernicke pupillary inaction sign may be demonstrated. The ophthalmoscopic signs are pallor of the optic nerves, with diminution of the blood currents, followed later by pronounced simple atrophy. Choked disc occurs in the later stages in a few cases where intracranial tension is much increased. The most instructive changes are in the visual fields. While it was formerly thought that bitemporal hemianopsia was diagnostic, it is now held that scotoma, homonymous hemianopsias and even slight cutting in the temporal fields are of no less significance. Great stress was laid upon the importance of recognizing cutting in the color sense in the upper, outer field of vision. Scotomas, paracentral in type, symmetrical in the two eyes or not, are of great significance. The field in one eye is usually much more compromised than in the other. Great variations occur in the field from day to day, according to the changing of pressure exerted upon the optic nerves within the brain.

Dr. Posey dwelt upon a diminution of the light sense due to involvement of the axial fibers of the optic nerve, as a symptom of great importance. Homonymous hemianopsia is explained by an extension of the disease process backwards and the involvement of the tract. Binasal hemianopsia sometimes occurs, but in rare instances, and illustrates how varied the pressure may be upon the chiasm and optic nerves. Involvement of the motor nerves of the eyes occurs, but is infrequent.

"The Nervous Symptoms."—John H. W. Rhein, M. D.

The symptoms of diseases of the pituitary body are interesting to the neurologist chiefly because this organ is connected with the brain and produces symptoms referable to the nervous system by reason of pressure upon the neighboring parts rather than for nervous symptoms which disorders of the gland itself may cause. Dr. Rhein divided the symptoms into three groups, namely—hyperpituitarism, hypopituitarism and dyspituitarism. Typical examples of hyperpituitarism or hypopituitarism are rare, one condition overlapping the other and giving rise to a syndrome which is best described as dyspituitarism. Cushing classifies the states of dyspituitarism into five groups, namely: "Group 1—Cases of dyspituitarism in which not only the signs indicating distortion of neighboring structures but also the symptoms betraying the effects of altered glandular activity are outspoken. Group 2—Cases in which the neighborhood manifestations are pronounced but the glandular symptoms are absent or inconspicuous. Group 3—Cases in which neighborhood manifestations are absent or inconspicuous, though glandular symptoms are pronounced and unmistakable. Group 4—Cases in which obvious distant cerebral lesions are accompanied by symptomatic indications of secondary pituitary involvement. Group 5—Cases with a polyglandular syndrome in which the functional disturbances on the part of the hypophysis are merely one and not a predominant feature of a general involvement of the ductless glands."

In a study of 169 cases vertigo was mentioned in 10 per cent of the cases. Roth, however, in a statistical study found vertigo present in about 30 per cent of the cases. Vomiting is a comparatively frequent symptom and occurs in 20 to 40 per cent of the reported cases.

The symptoms referable to the visual apparatus briefly consist of disturbances of the field of vision, occasional oculomotor involvement, nystagmus, exophthalmus, ptosis and photophobia.

Other cranial nerve involvement is rare. There are, however, a few cases on record in which the facial nerve is paralyzed in some instances.

It may be said, further, that the increase in the fat deposit is due to deficient posterior lobe secretion. Wakefulness, excitability and irritability point to hyperpituitarism, drowsiness and convulsions, to hypopituitarism. Hyperpituitarism produces giantism and acromegaly. Hypopituitarism produces adiposity, failure of development and sexual infantilism in childhood. and in adults sexual infantilism of the reversive type.

"The Medical Treatment."—Wendell Reber, M. D.

Two years ago (in Scranton) I spoke of a case of pituitary disease that had increased to the point of hemianopsia and who declined operation. The patient was then put upon thyroid extract and pituitary substance and regained full visual fields. I called attention to the fact at that time that inasmuch as there were certain cases which spontaneously ruptured, it is quite possible that there were other cases. In view of these facts, it seemed to me wise to exhaust medical measures before resorting to surgical measures. Hirsh reports 3 in 9 cases operated on who died. Waldeck reported a case last year treated by organo-therapy in which full fields had been gained and full visual functions. So that it seems to me it is well worth our while to consider the possibilities of organo-therapy.

In the early part of this year I saw a case which at first presented the clinical features of non-inflammatory glaucoma. I studied this case very carefully and for a long while. The fields are extremely interesting in that they offer the binasal rather than the bitemporal phase, which would favor the diagnosis of glaucoma. There was a small island in the center of the field of the right eye; in the left eye there was a little central field and then an island. Corrected vision equaled 6/5. There was a saucering of the nerve, with a slight undermining of the edge of the disc. I finally advised against operation and put him on miotic treatment and elimination. The case was later studied exhaustively by Dr. Weeks of New York and we both came to the same conclusion, that it was probably a case of mixed picture or disease of the pituitary body.

I feel that we are not simply justified, but absolutely called upon, where the symptoms are not too urgent, to first exhaust medication, including every possible form of organotherapy, before counseling resort to surgery.

DISCUSSION. Dr. William Zentmayer said that he should like to emphasize the point brought out by Cushing that homonymous hemianopsia occurs with greater frequency in these cases than is generally supposed. The explanation given by Cushing of the apparent preponderance of bitemporal hemianopsia being that this defect is the one for which cases are referred to those particularly interested in conditions about the hypophysis. Another important point in connection with field defects is that the cases which ultimately become bitemporal hemianopsic often early show symmetrical contraction of the upper outer boundary. Dr. Zentmayer referred to a case in which the deep-seated nasal pain was the cause of the case being mistaken for one of intranasal disease. A feature of importance in hypophyseal disease is the fluctuation which occurs in the symptoms. A symptom that he had not here touched upon was the early cessation of menstruation. Referring to the rarity of muscular palsies, Dr. Zentmayer stated that in one case he had seen there was a unilateral paresis of accommodation.

Dr. T. B. Holloway: As to the prevalence of exophthalmos in association with pituitary lesions. Dr. Holloway stated that he had seen one case and in this the exophthalmos was but slight. Uhthoff in his statistics credits exophthalmos with being present in 8 per cent of the cases. Lafon has suggested a symptom that has not been mentioned, that is, a recurring congestion of the bulbar conjunctiva, which he is inclined to attribute to associated thyroid trouble, and believes that the congestion is dependent upon vaso-motor disturbance. What Dr. Reber has suggested as a possibility, had actually occurred in a case that had recently come under his observation. A previous diagnosis of chronic glaucoma had been made, but a study of the case at the time it came under Dr. Holloway's observation showed field changes characteristic of pituitary body disease, and the x-ray findings, sugar tolerance, and other phenomena all pointed unquestionably to the existence of a pituitary lesion. From the appearance of the discs alone, the diagnosis of chronic glaucoma was not unjustifiable. He thought it possible that the symptoms of sinus disease might be superimposed upon the other symptoms, owing to the breaking through of a tumor and the encroachment made upon the adjacent cells. In reference to the field phenomena, this would depend upon the portion of the tract compressed. Dr. Holloway then referred to the relation of the Circle of Willis to the visual tract and referred to the possibility of vascular constriction in tumor of the base and frontal lobes. In several cases he had observed, after operation by Dr. Frazier through the fronto-orbital region, an impairment in upward rotation on the operative side, but this promptly subsided and in no instance had he seen it persist as an enduring symptom.

W. Walter Watson, M. D.
Secretary.

COLORADO OPHTHALMOLOGICAL SOCIETY.

DR. MELVILLE BLACK, *President.*

DECEMBER 19, 1914.

Atrophy of the Choroid, Retina and Nerve.

Dr. Otis Orendorff presented a man, age 61, occupation cook, whose vision had been failing for the past six years and rapidly so the past few months until it is now but 1/20 in each eye with no improvement by lenses. No laboratory tests had been made, but the most careful inquiries into the patient's history failed to explain the cause of the trouble, which by the ophthalmoscope is shown to be atrophy of the choroid, retina and nerve.

DISCUSSION. Dr. E. R. Neeper said that the prognosis was bad but that he would suggest looking into the nasal condition, whereupon Dr. Orendorff replied that it had been done but that nothing could be found to explain the condition.

Dr. F. R. Spencer said that it might possibly be due to syphilis and suggested a Wassermann.

Dr. C. A. Ringle had had two such cases but could not find the cause and could suggest nothing in the line of treatment.

Dr. W. C. Bane referred to a similar case that he had seen in 1891.

Dr. Edward Jackson thought the prognosis hopeless. Condition of the retinal vessels might point to syphilis, then again, the man being a cook and thus exposed to heat might have some bearing upon the choroiditis.

Dr. Melville Black remarked that it being the habit of cooks to eat more or less all the time, that a toxic element may have been causative. Did not believe it due to syphilis, but would suggest that all laboratory methods be resorted to for the purpose of clearing up the etiology.

Dr. W. A. Sedwick suggested that pyorrhea might enter into its causation and would have the condition of the mouth carefully looked into.

Injury to Eye by Iron. Traumatic Cataract.

Dr. W. A. Sedwick presented a man, laborer, aged 32, whom he had seen ten hours after injury. While breaking an enamelled cast iron bed with a hammer was struck in right eye by a piece of iron. The wound of entrance extended transversely from limbus to limbus, and the foreign body, which weighed 17 grs. and measured 12x10mm., was found in a perpendicular position just in front of the lens with part of the iris, which was lacerated, in front of and part behind the foreign body. In attempting to remove the foreign body by means of the magnet, Drs. Bane and Stilwill assisting, it was found necessary to incise the cornea vertically from the horizontal wound to the limbus above. The eye has given no evidence of infection and at no time has the patient had pain. Present condition—traumatic cataract, inflammatory exudate in anterior chamber, reduced tension, eye somewhat congested with perception of light.

DISCUSSION. Dr. D. H. Coover thought that there could be little doubt but that the eye would have to be removed.

Dr. E. R. Neeper questioned the advisability of incising upward and thought that if it were necessary to have more room that with the idea of conserving vision it had been better to have incised along the limbus. Dr. Bane thought the procedure followed in this case proper.

Glioma?

Dr. D. H. Coover presented a baby one year old with the following history: When two months old the left eye turned in. Did not notice that the eye was larger than the right eye at that time. When the child was six months old the parents noticed that scum had formed over the left eye, that its color was darker and that the eye was larger; since that time it has gradually increased in size. Now the cornea is hazy and large, anterior chamber shallow, pupil slightly dilated and fixed, tension elevated with yellow reflex from posterior chamber.

DISCUSSION. Dr. Edward Jackson said that the case was probably glioma.

Dr. G. L. Strader remarked that the few cases that he had seen had appeared whiter than in this.

Dr. Melville Black: The question is whether this eye should be removed or not? Said that he would remove it and make the diagnosis afterward.

It was the consensus of opinion of those present that the eye should be removed. Dr. Coover was asked what he would place in the cavity, to which he replied, Fox's gold ball in Tenon's capsule.

Dr. Coover later removed the eye and the pathologist verified the diagnosis of glioma of the retina.

Fracture of the Right Lower Orbital Margin With Paralysis of the External Rectus.

Dr. G. L. Strader exhibited this case, a boy of 19 who on Nov. 21st, 1914, fell 25 feet from a telephone pole, striking on head. Unconscious for a time and double vision since. The condition above mentioned obtained and Dr. Strader wanted to know the outlook for recovery.

DISCUSSION. Dr. Jackson thought it too early to predict the outcome, but thought possibly that the paralysis may have been due to hemorrhage and that there might be complete recovery.

Dr. Black referred to a case that had paralysis of the ext. rectus from a blow upon side of face, no recovery.

Dr. Neeper spoke of a case that he had reported of paralysis of the ext. rectus following fall from a bicycle; for six months there was no improvement, but in the next six months complete recovery had taken place.

Dr. Ringle stated that he had had three similar cases, recovery in two with result unknown in the third.

Lens and Vitreous Changes Following Trauma.

Dr. Edward Jackson, Case 1. A. G. in 1904 left eye was cut by flying piece of steel. In 1911 right eye was struck by water from the nozzle under 100 lbs. pressure, at 2½ feet distant. Has suffered from malaria. 10/3/13 Vision: R.4/30:—L. 4/80. R. Fine opacities in anterior vitreous; fundus normal. L. Linear opacity in cornea to nasal side of pupil. Dustlike opacities in the lens with larger dots near the posterior pole. Opacity of central portion of the vitreous. Fundus dimly seen appears normal. No evidence of foreign body. Present vision, R. 5/15, L. 5/30. Vitreous has cleared some in both. Dionin 2% has been used and K. I. given.

Dr. Jackson made report on a second case that had been shown by him at the October meeting, in which a man had been struck violently by a board on the outer edge of the left orbit, resulting in immediate blindness of the left eye. The fundus was pushed forward and showed choroidal vessels. At that time the tension was R. 32 mm. and L. 6 mm. Since October tension in L. has varied from 0 to 17 mm. No light by transillumination. Mass appears more pushed forward.

DISCUSSION. Case 2. Dr. G. F. Libby: Fundus being forward would not believe it due to hemorrhage, but would favor growth.

Dr. Melville Black thought that the contraction of an organized clot might have brought the fundus forward, but the eye was one that should come out.

Dr. E. R. Neeper did not favor the idea of growth and believed that the result would show it not to be.

Dr. E. E. Edmonson (Mt. Vernon, Ill.): Such eyes are of no value and should be removed because they are dangerous. Uveitis being present in the offending eye, sympathetic ophthalmia may develop.

With reference to the use of dionin, Dr. Neeper said that he believed it better to use a 5% once a week rather than the weaker solutions more frequently, thus avoiding tolerance being established.

Blepharo-Chalasis.

Dr. Melville Black presented a boy with what he believed to be blepharo-chalasis.

Some of the gentlemen were disinclined to agree with Dr. Black, and attributed the oedematous and boggy condition of the upper lids with the existing ptosis to trachoma, though the patient gave no history of such infection. The case will be kept under observation.

Acute Inflammatory Glaucoma both eyes.

Dr. Black presented this case. A woman, age 59, with general arterial sclerosis, blood pressure 200 mm. Patient first seen Dec. 20, 1913, at which time she was just recovering from grip; the day before the left eye had become inflamed, painful and poor in vision. At the time of the examination the vision of the left eye was reduced to light perception, cornea steamy, pupil dilated and tension 70 mm. Hg. Eserine was instilled every five minutes for an hour, but with no effect. Her right eye was normal in every particular, vision, tension and nerve head. The left eye was operated upon by Elliot's trephining with a 2 mm. trephine driven by the von Hipple instrument. The next morning vision was returning in this eye and there was but little reaction; but the right eye was red, cornea steamy, vision lowered and tension up to 60 mm. Eserine promptly cleared up the symptoms and controlled them until the left eye was well enough to be used, then the trephining operation was done on the right eye. In the right eye the coloboma does not include the pupillary margin while in the left it is complete with the typical key-hole pupil. Over the trephine openings there are small, distinct, clear blebs through which can be seen the open, dark trephine hole in each eye. Proper filtration is evidenced by the slight oedema present on either side of the cornea. Her vision is O. D. 20/20 —2.50—1.00 ax 165. O. S. 20/20—2.50—2.50 ax 23. Visual fields are normal. The doctor says: "I regard the result in this case as perfect and see no reason to believe that the filtration which has been going on so satisfactorily for a year will not continue to do so as long as she lives. In this case, by the way, we used 4 gr. doses of chloral hydrate t. i. d. off and on, to reduce her blood pressure, which it did in a most satisfactory manner.

Glaucoma Simplex. Trephining.

Dr. Black's case. Man, age 46, occupation, plumber. Duration of trouble 2 years. First saw patient Nov. 25th, 1914, at which time vision was O. D. 20/200 and O. S. 20/70. Ophthalmoscope: 5 D. cupping of each disc, the excavation involving the entire disc. Visual fields contracted to about 5° in all meridians. Patient can scarcely get about alone. Tonometer: (Gradle's Mod.) O. D. 40 mm., O. S. 38 mm. Prescribed eserine O. 5%, which brought down the pupils and tension. Blood pressure 120. Nov. 27th, Elliot's trephining in each eye with 2 mm. trephine driven by von Hipple's mechanical instrument. Very little reaction followed the operation. The conjunctival blebs are pronounced. Atropine was used for a few days following the operation until the time for iritis to develop had passed. Dec. 15th patient was brought to the office and examined and his vision found to be the same as before operation. The field of the right eye had extended in the temporal portion to 40 degrees, but had not improved in the vertical. No improvement in left field. The most marked improvement is shown in the cupping of the discs, the only sharp edges being on the nasal sides and they have the appearance resembling physiological cups. The tension at this time was O. D. 14 mm. and O. S. 17 mm. Hg. The blebs over the trephine openings are clearing so that the dark trephine holes can be seen. Colobomas are symmetrical.

Dr. Black also presented a woman, age 56, who had that day been found to have sub-acute inflammatory glaucoma of the right eye and for whom he had prescribed eserine. She gave a history of recurring attacks and the tension was 66 mm. Eserine having failed to affect the pupil, alleviate the pain or reduce the tension the doctor did a sclero-corneal trephining in the presence of the members of the society.

Acute Inflammatory Glaucoma. Trephining.

Dr. W. H. Crisp presented a case on which he had operated a few days before, doing a sclero-corneal trephining, obtaining perfect drainage and consequent subsidence of all the untoward symptoms.

Dr. Coover showed the field chart of a case operated by him for glaucoma; the patient had been advised not to be operated. The direct result was to increase the field, but at the last examination the field was reduced with normal tension.

Dr. Neeper said that the high frequency current for 20 minutes would have reduced the tension. Also voiced his objection to the button being hinged, believing that remnant of flap blocks opening.

Dr. Jackson reported case of blastomycosis in which he had applied silver to the ulcerated lids and given K. I. internally, as much as 30 grs. were given three times a day, said treatment being followed by recovery.

Dr. Bane exhibited and demonstrated a sideroscope of his devising and which he had had constructed by a local firm. The principal feature of the instrument was its cheapness.

E. T. Boyd,
Secretary.

COLORADO OPHTHALMOLOGICAL SOCIETY

A. C. H. FRIEDMAN, M. D., *President.*

January 16, 1915.

Wound of Cornea, Iris and Lens.

Dr. A. C. Magruder presented a girl five years of age who, 2½ years ago, had received a penetrating wound of the cornea, iris and lens. Present condition: light perception, no anterior chamber or pupil; globe somewhat atrophic with elevated tension.

DISCUSSION. A few favored an operation upon the iris, but the majority were in favor of enucleation.

Dr. Magruder also presented a man, 72 years old, who six years ago had fallen from a scaffold, which he claims had damaged his vision and caused cataract.

Fundus shows a condition of apparently old hemorrhagic retinitis with cholesterin in the vitreous. No evidence of cataract.

DISCUSSION. Some thought that the present ocular condition preceded the injury while others believed that the injury might have been responsible for the condition present.

Sclero-Keratitis.

Dr. E. R. Neeper presented a woman, aged 55, with sclero-keratitis; von Pirquet positive. He had not been allowed to give tuberculin.

DISCUSSION. Dr. Edward Jackson and Dr. Melville Black emphasized the importance of tuberculin administered for its general and focal reactions as well as for its therapeutic effects in this class of cases. Dr. Neeper said that he thought the tendency at present was to overrate the importance of tuberculosis as an aetiological factor in many ocular conditions where the cause was obscure.

Glaucoma with Marked Iris Atrophy.

Dr. Neeper presented this case. Woman, 62 years. Eleven years ago Dr. G. L. Strader of Cheyenne, Wyo., did a posterior sclerotomy upon the left eye and later an iridectomy, but the eye became blind, developed cataract which has been partially absorbed, but there is much lens matter with inflammatory debris in the occluded pupil. Eight years ago severe attack in right eye with recurring attacks of lesser moment since, the last being in November, 1912. Neither eye has been painful the last two years, during which time the atrophy has been more pronounced. V. O. D. 20/20 partly. With correction +0.25 with +0.37 ax 90=20/20—. V. O. S.=Movements through atrophic coloboma near temporal limbus.

Kerato-Iritis. Blindness following Post-Partum Hemorrhage with recovery of vision.

Dr. J. R. Robinson presented this case. A woman, 38. Right eye nearly blind with eccentric vision from squint, has been inflamed six months. Six months ago following post-partum hemorrhage the left eye became blind, but vision was recovered. Right eye became inflamed and painful and the cornea cloudy last December, the iris was bound down by adhesions which were broken with atropine. The cornea has been cloudy since August.

Traumatic Keratitis.

Dr. J. A. Patterson's case. Man, aged 30. Mill worker. First seen in December, 1914; right eye had then been inflamed for three weeks without pain; then denied injury, but subsequently it was learned that he got some powdered ore or dust into the eye while sweeping above his head. There was a central corneal opacity involving the deep layers that stained in spots. As foreign bodies were believed to be present the spots were gently curetted and silver nitrate 50% applied. Subsequent history disclosed the fact that a workman had supposedly removed a foreign body from this eye when first injured. On Dec. 31 a 1:2000 cyanide of mercury was injected and the next morning the pupil dilated easily. Injections of sol. cyanide of mercury (with acoin) 1:2000, 1:1500 and 1:1000 were given Jan. 2, 7 and 13 respectively, and the eye progressed to a favorable termination, though a permanent central leucoma is probable.

Dr. Patterson believed that the use of cyanide of mercury injection was responsible for recovery of this man's eye. Dr. Black fully agreed with Dr. Patterson.

Dr. Neeper thought it important to determine the nature of the bacteria causing the ulceration and cited cases of pneumococcic infection which had cleared up like magic under the use of ethyl-hydro-cuprein hydrochloride. Dr. Black remarked that he had procured some of the new specific for the pneumococcus, ethyl-hydro-cuprein, but that it would not dissolve and that he was glad to know that it was the hydrochloride which is soluble in water and oil and which was specially made for use in the eye. He called attention to its supposed danger of causing quinine amaurosis when used in too strong solutions. Dr. Black also mentioned that he had found that a 1-3 grain novocain tablet dissolved in the syringeful of cyanide of mercury solution rendered the injection practically painless.

Dr. Neeper made preliminary report of a trephine that he had devised, for making an opening from the lachrymal sac into the upper part of the nose. False passage is then maintained patulous by the wearing of a style.

Dr. Friedman showed a case of leucoma adherens in the right eye of a girl of 16 and a case of optic atrophy in a man of 77.

E. T. Boyd, Secretary.

ROYAL SOCIETY OF MEDICINE. SECTION OF OPHTHALMOLOGY.

MR. PRIESTLEY SMITH, *President.*

February 3, 1915.

Glass-workers' Cataract.

Mr. Bernard Cridland showed a case of glass-workers' cataract in an iron-smelter ("puddler"). He brought the case to give an opportunity for the discussion of the type of case in iron-workers in relation to industrial diseases, as these men were not included in the Schedule. Considering the number of hours of exposure to the glare of the molten metal, his surprise was that there were not more cases, especially as these men rarely wore protective goggles. He suggested that a more inclusive term should be applied to the cases of cataract so caused, such as "ray cataract."

DISCUSSION. Mr. C. B. Goulden said he had a case now under care in a welder, and he thought an investigation would disclose that the condition was more common among iron workers than was generally believed. The man who preceded his patient at the work also lost his sight. It was not until quite late that the workers complained, because owing to the dilatation of the pupil they were able to see round the cataract.

Dr. Legge, of the Home Office, asked as to the proportion of iron workers afflicted with this condition, as it was necessary in considering the scheduling of diseases to proceed tentatively. In the case of glass-blowers' cataract there could be no question as to scheduling, as he examined the lenses of 513 glass-blowers, and found cortical cataract in 64 in the right eye, 72 in the left.

Mr. J. Herbert Parsons said that as Secretary of a Royal Society Committee on the subject he sent many inquiries to ophthalmic surgeons practising in iron working districts, and the negative replies he mostly obtained led him to the belief that it was the custom for moulders to wear tinted glasses. He asked for further evidence for his Committee to continue their investigations.

The President suggested the name "furnace-workers' cataract," seeing that furnace work was common to all.

Amaurotic Family Idiocy.

Dr. Cockayne and Dr. Attlee showed a case of amaurotic family idiocy, in an English child, not Jewish, as was the rule.

Corneal Rupture in Glaucoma.

Mr. N. Bishop Harman showed a case of spontaneous rupture of cornea in secondary glaucoma caused by dislocation of the lens. An injury caused total dislocation of one lens into the posterior chamber, where it was loose. The resulting glaucoma was absolute, and vision was lost. The cornea was anaesthetic, the iris quite retracted and immobile. The condition remained so for two years without ulceration of cornea or splitting of Descemet's membrane. Three months later, however, without any further accident, the cornea was split horizontally, and membranes prolapsed, the cause having been retrochoroidal haemorrhage.

Trench Periscope.

The President (Mr. Priestley Smith) showed a form of trench periscope he had just designed. At the top of a narrow shaft, six feet in length, is fixed at an angle of 45° a plane mirror, about 2½ inches in diameter, and an exact counterpart lower down, the distance from the first being adjustable by pegs and holes. Only the top mirror projects above the trench, and this can be largely concealed by a piece of earth. By looking straight into the lower mirror, all movements can be plainly discerned without incurring danger.

DISCUSSION. Lieut.-Col. Elliot pointed out how necessary, in order to estimate the distance of the enemy, it was to have the binocular form of periscope.

Cerebral Degeneration Associated with Macular Changes.

A paper was contributed by Dr. F. E. Batten and Mr. Stephen Mayou on "Cerebral Degeneration associated with Macular Changes," and gave a pathological description of a case. In these cases a curious pigmentation occurred at the macula, and usually also around it, and considerable optic atrophy was also present. Several of the examples of the condition which had been under his care died at Darenth Asylum. He exhibited the pedigrees of two families. In one case the changes in the macula were the last occurrences in the maren of degeneration. The brains of these cases did not present any macroscopic abnormality, and they had the usual convolutional pattern, as well as the normal weight and relationship to the cerebellum. The brain and nervous system were examined by several staining methods. There was found to be some degeneration of the medullated fibres; in the cerebellum the myeline was breaking down, and degeneration was present in the cells of Perkinje. The most profound change was in the Betz cells; instead of the Nissl granules, there was a curious accumulation of fine granules around the nucleus. In the cerebellum were large granular cells not normally seen, and he could not say what their significance was.

CORRESPONDENCE

March 17th, 1915.

Mr. B. J. Boyle,
Care the Keystone Publishing Co.,
512 Race street, Philadelphia, Pa.

Dear Sir:

In *The Keystone Magazine of Optometry*, under date of February 25th, 1915, there appears an article entitled "Anomalies of Accommodation and Their Practical Significance."

This paper was presented by me before the Pacific Coast Ophthalmic Society last July at their meeting in Seattle, Wash. It automatically became the property of that society, and by its consent was published officially in *Ophthalmology*.

It therefore has been deliberately stolen from the above mentioned publication and printed in your journal as an original communication.

The fact that you have neglected to print the portion of the paper which deals with the use of cycloplegics—a subject you naturally are very anxious to side step—does not, to my mind, lessen in any degree your responsibility in failing to state that it was reprinted from *Ophthalmology*.

I protest most emphatically against this reprehensible procedure and shall request the publishers of *Ophthalmology* to print this communication in their next issue.

I also feel that I have the right to demand a statement in the next issue of your journal, to the effect that the article is incomplete, was a reprint from *Ophthalmology*, and was in no sense an original communication by me to your journal.

Very truly yours,
JOSEPH L. MCCOOL.

March 9th, 1915.

Editor of THE OPHTHALMIC RECORD:

I was somewhat surprised to read in the last number of THE OPHTHALMIC RECORD, a report of a case of scleral trephining for detached retina by Dr. Thos. H. Curtin of New York, as a new operation. He evidently is not familiar with the literature on this subject and has not read very carefully THE OPHTHALMIC RECORD for the last year. It is more than a year ago that my report of the first case of scleral trephining for detached retina appeared in THE OPHTHALMIC RECORD, and at about the same time it appeared in Dr. Landolt's journal, *Archives D'Ophtalmologie*. This was the first published report of this operation. Dr. Walter R. Parker of Detroit subsequently recommended the operation, but the operation was wholly original with me. No mention of it had appeared in literature until after my report; and I had never heard or seen any recommendation of it prior to my making of it. If there is anyone who is entitled to any credit for priority, aside from myself, it is Col. Elliot, whose operation for glaucoma, as said in my report, was the forerunner of my operation for detached retina.

In my case the evacuation of the sub-retinal fluid reduced the intra-ocular tension with the re-establishment of the retina, and there was no occasion for any aspiration. For the last year I have relied upon this operation for all cases of detached retina, it having given better satisfaction than any other treatment in my hands. This first patient called not long ago, paid the remainder of his bill and expressed himself as being much pleased with the permanently good results.

Very sincerely yours,

FLAVEL B. TIFFANY.

CHILD-WELFARE LEGISLATION.

The following is the form of bill recently passed by the State of Wyoming. It is hoped that it may serve as a model for other states.

Be It Enacted by the Legislature of the State of Wyoming.

Section 1. It shall be the duty of every teacher engaged in teaching in the public schools of incorporated cities and towns of the state separately and carefully to test and examine every child under his jurisdiction to ascertain if such child is suffering from defective sight or hearing or diseases of nose or throat. (Amendment.) Provided that such examination shall be made by observation, by the teacher without using drugs or instruments and without coming in physical contact with such child.

Section 2. In making the tests required by Section 1 of this act the teacher shall employ eye testing charts of a standard character approved and supplied by the State Superintendent of Public Instruction and shall conform to the rules of the State Superintendent in methods of applying such tests, especial attention being given to defects that may be disclosed by the following questions:

1. Does the pupil habitually suffer from inflamed lids or eyes?

2. Does the pupil fail to read a majority of the letters in the number 20 line of the standard vision chart with either eye?

3. Do the eyes and head habitually grow weary and painful after study?

4. Does the pupil appear to be "cross-eyed?"

5. Does the pupil complain of ear-ache in either ear?

6. Does matter (pus) or a foul odor proceed from either ear?

7. Does the pupil fail to hear an ordinary voice at twenty feet in a quiet room?

8. Is the pupil frequently subject to "colds in the head" and discharges from the nose and throat?

9. Is the pupil an habitual "mouth breather?"

If an affirmative answer is found to any of these questions the teacher shall give such pupil a report to his parent or guardian made on a report blank prepared and furnished by the State Superintendent of Public Instruction such report to be made in form prescribed by the State Superintendent.

It shall be the further duty of the teacher to record the results of the examinations required by Section 1 of this Act in such a manner as may be prescribed by the State Superintendent of Public Instruction.

Section 3. It shall be the duty of the State Superintendent of Public Instruction to prescribe rules for making such tests as are required by this Act and to prepare copies thereof, together with all blanks, charts and printed forms deemed necessary by the State Superintendent for carrying into effect the provisions of this Act, and to distribute them to all the public school teachers in incorporated cities and towns of the state, such distribution to be made through the district boards or, if there be such, through the executive officers thereof, the expenses of such printing and distribution to be borne out of the State Superintendent's contingent; Provided That, the annual expense for such purpose shall not exceed one hundred fifty dollars.

Section 4. During the first month of each school year, after the opening of school, teachers must make the tests required of this act upon the children then in attendance at school; and thereafter, as children enter school during the year, such tests must be made immediately upon their entrance.

Section 5. It shall be the duty of the Boards of Trustees of the several school districts of the State to enforce the provisions of this Act.

Section 6. This Act shall take effect and be in force from and after July 1, 1915.

S. L. Ziegler, Philadelphia (*Journal A. M. A.*, Sept. 5, 1914), describes a method of corneal excision which he called "trefoil keratectomy," suitable for a limited staphyloma of the cornea. When the whole cornea is staphylomatous the operation is designated at "stellate keratectomy," and this is also described. The description is rather long and detailed, and should be consulted in the original, as it cannot well be condensed. Three cases thus operated on are reported.

J. W. Jervey, Greenville, S. C. (*The Journal A. M. A.*, July 11, 1914), takes up the subject of hookworm in its relation to disease of the eye, reviews the literature of this disease, and comes to the conclusion, that it is a cause of eye troubles only through the general systemic condition and the anemia which it produces. None of the eye symptoms that occur in the disease are in any sense sufficiently distinctive or characteristic to be of diagnostic value. In other words, the association of eye symptoms and uncinariasis must be regarded as purely incidental and the eye symptoms occur only as sequelae of the recognized pathologic conditions. When we see the signs of anemia in the eye grounds or in the face, for that matter, we may perhaps suspect the hookworm as being a possible cause but need go no further. A tabulated statement of the eye symptoms in fifty-three hookworm patients observed by him accompanies the paper.

NEWS AND NOTES.

Personals and items of interest should be sent to Dr. Emory Hill, 122 South Michigan avenue, Chicago, Ill.

As these columns go to press on the 15th of the month previous to publication, contributors will kindly send in their items before that date.

Dr. J. Milton Griscom has been elected recording secretary of the Philadelphia Alumni Society of the Medical Department of the University of Pennsylvania.

The deaths of the following ophthalmologists are announced: Drs. Guthrie of La Salle, Ill., and Lack of Brooklyn, N. Y.

The South Baltimore Eye, Ear, Nose and Throat Hospital has issued an annual report showing that 4,046 patients were treated in the past year.

In the death of Dr. Dudley Sharpe Reynolds of Louisville, Ky., the profession loses a member of wide reputation and usefulness as a practicing ophthalmologist and teacher.

Professor Julius Arnold of Heidelberg, who died recently, was an authority on pathological anatomy, whose work was concerned partly with eye anatomy.

Wyoming, North Dakota and Utah have adopted the Allport method of the examination of school children's eyes and ears by the teachers.

Among the out-of-town guests at the February meeting of the Chicago Ophthalmological Society were Drs. Edward Jackson of Denver, D. T. Vail of Cincinnati, Nelson M. Black of Milwaukee, and L. W. Dean of Iowa City.

The Chicago Society for the Prevention of Blindness met at luncheon recently under the presidency of Mr. Bryan Lathrop. Plans were made for a campaign in favor of legislation dealing with this important problem.

Dr. Linn Emerson, of Orange, N. J., has opened an office in the Tilden Building, 105 West Fortieth Street, New York City.

The Colorado Ophthalmological Society is arranging for an Ophthalmological Congress, to be held in Denver, July 22 and 23, 1915, to which all ophthalmologists are invited.

Dr. Nelson Miles Black of Milwaukee addressed the Chicago Illuminating Engineering Society on February 25 on the subject "A Résumé of the Physical, Physiological and Psychical Phases of Vision."

Twenty-two cases of total blindness among the British troops in the present war have been reported—a larger proportion than in previous wars. Steps have already been taken to provide asylum for such cases and teach them occupations and games.

Former Professor H. Shiess-Gemuseus of the University of Basel died recently at the age of 82. He organized the eye clinic at Basel and held the chair of ophthalmology for many years, retiring at 60. Subsequently he had the misfortune to become totally blind, from detachment of the retina in one eye and cataract in the other.

The interference with commerce between the United States and Europe as a result of the war is gradually reducing the supply of glass suitable for optical lenses in this country. The price of lenses has already increased and will undoubtedly increase more within the year. The bureau of standards of the Department of Commerce at Washington has begun experimentation for the purpose of developing methods of making optical glass. Up to the present time none of the higher grades of lenses have been manufactured in America.

Armour's
LABORATORY
Products

Fresh raw material makes the most reliable goods

Armour's

- *Thyroids*—powder and tablets
- *Parathyroids*—powder and tablets
- *Anterior Pituitary*—powder and tablets
- *Posterior Pituitary*—powder and tablets
- *Lecithol*
- *Extract of Red Bone Marrow*
- *Elixir of Enzymes*
- *Peptonizing Tablets*
- *Peptonizing Powder*
- *Pituitary Liquid*—standardized and **dated**

Corpus Luteum

(*Armour*)

GUARANTEED from true substance. In amenorrhea, dysmenorrhea, artificial menopause, reflexes of nervous or congestive origin, psychoses, neurasthenic symptoms during menstrual life, sterility, impairment of ovarian function, repeated abortions, hyperemesis of early pregnancy.

In powder, 5-grain capsules and 2-grain tablets.

ARMOUR AND COMPANY
Chicago

CHICAGO EYE CLINICS.

Hour.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
9 A.M.	Richard S. Pattillo (P.-G.) G. W. Mahoney (Poli.) R. B. Stephenson (P.-G.)	*Geo. F. Suker (P.-G.) C. H. Francis (Poli.) A. Duncan (P.-G.)	W. F. Coleman (P.-G.) S. M. Hager (Poli.) H. N. Lyon (P.-G.)	G. W. Mahoney (Poli.) Rich'd S. Pattillo (P.-G.) R. B. Stephenson (P.-G.)	C. H. Francis (Poli.) R. B. Stephenson (P.-G.)	S. M. Hager (Poli.) C. W. Hawley (P.-G.) H. J. Morlan (P.-G.)
10 A.M.	Brown Pusey (N.W.U.) Geo. T. Jordan (N.W.U.) Robert Blue (N.W.U.) Every day, 10-12 A. M.					
1 P.M	M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) Emily Selby (Inf.) *H. W. Woodruff (Inf.) *Oscar Dodd (Inf.) C. A. Leenheer (Inf.) D. W. Eiss (Inf.) E. R. Cressley (Inf.) C. C. Clement (Inf.) E. V. L. Brown (County) and Geo. F. Suker (County) Daily, 2:30 P. M.	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) E. K. Findlay (Inf.) Wm. E. Gamble (Inf.) J. B. Loring (Inf.) *Wm. H. Wilder (Inf.) S. L. McCreight (C.C.S.) E. V. L. Brown (Inf.) Robt. Von der Heydt (Inf.) L. G. Hoffmann (Inf.) A. P. Hunneman (Inf.) M. Goldenberg (Inf.) Francis Lane (Inf.) If. Walker (Inf.)	M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) Emily Selby (Inf.) *H. W. Woodruff (Inf. *Oscar Dodd (Inf.) C. A. Leenheer (Inf.) D. W. Eiss (Inf.) E. R. Cressley (Inf.) C. C. Clement (Inf.)	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) *Frank Allport (St. Luke's) *Frank Brawley (St. Luke's) E. K. Findlay (Inf.) Wm. E. Gamble (Inf.) *Paul Guilford (St. Luke's) *Casey Wood (St. Luke's) *T. A. Woodruff (St. Luke's) J. B. Loring, (Inf.) *Wm. H. Wilder (Inf.) S. L. McCreight (C.C.S.) E. V. L. Brown (Inf.) Robt. Von der Heydt (Inf.) L. G. Hoffman (Inf.) A. P. Hunneman (Inf.) M. Goldenberg (Inf.) Francis Lane (Inf.) H. Walker (Inf.)	M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) Emily Selby (Inf.) *Oscar Dodd (Inf.) C. A. Leenheer (Inf.) D. W. Eiss (Inf.) E. R. Cressley (Inf.) C. C. Clement (Inf.) H. W. Woodruff (Inf.)	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) E. K. Findlay (Inf.) Wm. E. Gamble (Inf.) J. B. Loring (Inf.) *Wm. H. Wilder (Inf.) S. L. McCreight (C.C.S.) E. V. L. Brown (Inf.) Robt. Von der Heydt (Inf.) L. G. Hoffman (Inf.) A. P. Hunneman (Inf.) M. Goldenberg (Inf.) Francis Lane (Inf.) H. Walker (Inf.)
3 P.M.	*Wm. E. Gamble (U. of I.) Wm. H. Wilder (Rush) H. S. Gradle Daily 3-5 (E. M. D.)	R. J. Tivnen (M. H.)	W. Allen Barr (C.C.S.) *Wm. E. Gamble (U. of I.)	Wm. H. Wilder (Rush) R. J. Tivnen (M. H.)	W. Allen Barr (C.C.S.)	Geo. F. Suker (P. G.) 2-5 H. Cuthbertson A. Duncan
4 P.M.	W. F. Coleman (P.-G.) H. N. Lyon (P.-G.) 2-5	C. W. Hawley (P.-G.) 2-5 J. F. Campbell (P.-G.) H. J. Morlan (P.-G.)	J. B. Loring (U. of I.) E. K. Findlay (U. of I.) G. F. Suker (P.-G.) 2-5 H. Cuthbertson (P.-G.)	C. W. Hawley (P.-G.) J. F. Campbell (P.-G.) H. J. Morlan (P.-G.)	W. F. Coleman (P.-G.) 2-5 H. N. Lyon (P.-G.)	

*Special operative eye clinic.

ABBREVIATIONS:

C. C. S.: Chicago Clinical School, 1844 W. Harrison Street.

E. M. D.: Emanuel Mandel Dispensary, 1012 Maxwell St

County: Cook County Hospital, W. Harrison and Honore Streets.

Inf.: Illinois Charitable Eye and Ear Infirmary, Peoria and Adams Streets.

M. H.: Mercy Hospital.

Poli.: Chicago Policlinic and Hospital, 221 W. Chicago Avenue.

P.-G.: Post-Graduate Medical School of Chicago, 2400 Dearborn Street.

N. W. U.: Northwestern University, 2431 Dearborn Street.

Rush: Rush Medical College, W. Harrison and Wood Streets.

St. Luke's: St. Luke's Hospital, 1416 Indiana Avenue.

U. of I.: College of Medicine, University of Illinois, Congress and Lincoln Streets.

THE
OPHTHALMIC RECORD
A MONTHLY REVIEW OF THE PROGRESS
OF OPHTHALMOLOGY

Vol. XXIV CHICAGO, MAY, 1915 No. 5, New Series

ORIGINAL ARTICLES

FALSE HETEROPHORIA AND HETEROTROPIA.

BY
ERNEST E. MADDOX, M. D.
BOURNEMOUTH, ENGLAND.

This paper attempts to investigate a subtle little danger which appears to have been remarkably overlooked, namely, that of diagnosing a vertical or horizontal deviation by our present tests, when in reality there is none. This is what I mean by false heterophoria.

The question as to whether, when we attempt to measure hyperphoria, the streak projected by a glass rod should or should not be rotated to apparent rectitude whenever the patient sees it slanting, has compelled me to undertake this investigation, which incidentally throws light also on prismphorometers.

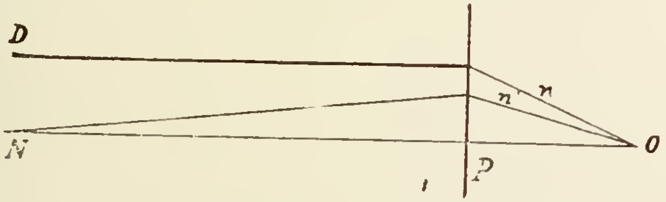


Fig. 1.

I have shown elsewhere* the not unimportant fact, which I need only therefore briefly refer to, that the correcting power of a prism over *any* deviation of the visual lines, is less in near than in distant vision, so that a surgeon who measures the heterophoria by neutralizing it with prisms in near vision only, would overestimate its amount, and the full correction thus found would overcorrect the deviation for distance. Fig. 1, taken from my little book on prisms, makes the reason for this mistake so self-evident that it scarcely needs explanation.

---

* *Ophthalmological Prisms*, 5th Edition, p. 178. (John Wright, Bristol.)

The line NO represents the visual axis of the naked eye, while the lines n and n′ are the successive positions of the visual line of the other eye on looking through a prism P, first at a distant (D) and then at a near object (N). The distance PO is that of the prism from the center of motion of the eyeball, here indicated by O, and this is generally about one inch. Since the lines n, n′ are about equally bent on traversing the prism, the deflection of the eye is less in near vision by the reciprocal of the distance of the object from the prism in inches. Thus with vision for ten inches, a prism would be one-tenth less effective, and only correct nine-tenths of a heterophoria which it fully corrects for distance.

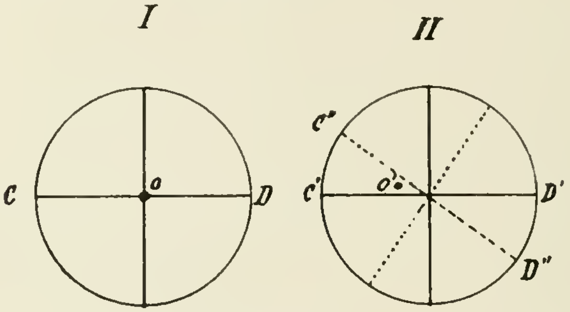


Fig. 2.
Alfred Graefe's diagram (1858), reproduced from his *Analyse*, p. 108.

Let us now consider the far more important fallacy which forms the subject of this paper. It is that whenever cyclophoria more manifest in one eye than in the other coexists with a horizontal or vertical deviation, dissociation of the eyes by a prism before one eye, or by two weaker prisms, one before each eye, produces "false heterophoria."

Since commencing this study I have been interested to find that so far back as 1858 (and therefore long before the days when cyclophoria received its modern study) Alfred Graefe showed that when a patient with paralysis of one superior oblique is made to look strongly downwards at a candle flame, so as to produce a very forced position of the visual axes downwards, the patient may project the false image which properly lies lowest (as belonging to the affected eye) even higher than the true image. The diagrams by which he explained this phenomenon I have thought it might be interesting to reproduce in Fig. 2.

I, in Fig. 2, is the sound eye, and II the lamed one. Although the actual image O′ on the retina of the lamed eye (II) lies higher in space than O in the other eye, it falls in a lower quadrant of the retina, owing to the marked extorsion of the eyeball, which brings the originally horizontal meridian of the retina C″D″ to lie above the image. The torsion is due to the excessive action of the Rectus Inferior. In this case, therefore, we have an example of hypertropia truly existent, yet diagnosed as if it lay in exactly the opposite direction. Now in our daily testing, are we not in danger of falling into mistakes of the same order if we take no account of marked cyclophoria?* A few diagrams will make it quite clear.

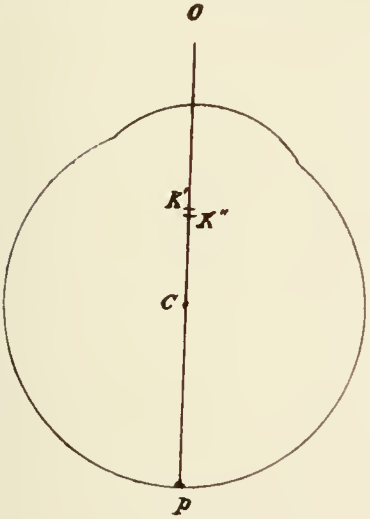


Fig. 3.
A straight right eye.

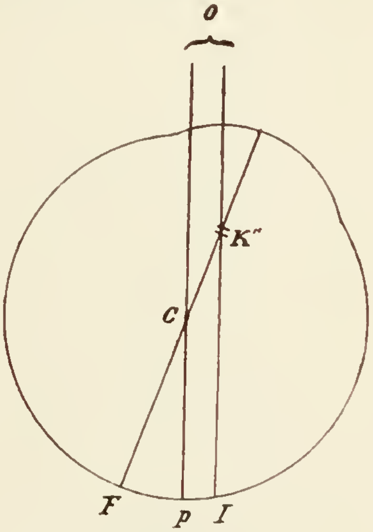


Fig. 4.
The same right eye in exotropia.

Though the eyeball is not quite spherical, and though the motor center is not quite geometrically central, it will suffice to draw them as if they were. In Fig. 3 let Op represent the sagittal plane, passing through the center of motion of the

---

[*] I was helped in the study of this subject (and am glad to acknowledge this debt) by an interesting letter from Mr. Alison Bradburne some years ago, describing a case in which the hyperphoria which accompanied an exophoria was lessened *in near vision* by a prism base-in to correct the exophoria, which he rightly explained (with diagrams similar to Alfred Graefe's) by the prism driving the image horizontally so as to bring it nearer to the now sloping, but originally horizontal, meridian of the retina. The phenomenon was offered as a proof of Listing's law, but I think it rather due to Meissner's torsion.

straight eye. A sagittal plane (let us recall) is parallel to the median plane of the head, its name being suggested by the direction of an arrow which an archer is just about to let fly. The eye, let us suppose, is occupied with a very distant object (O) in this plane, so that the visual line, the nodal points, (K′ K″), the center of motion (C) and the fovea at p all lie in it.

Now suppose the visual line to experience a deviation to the right as in exotropia (see Fig. 4.) The only stationary point in the moving visual line is the center of motion (C), about which it has turned. The posterior nodal point (K″) lies about 6 mm. in front of, and the fovea (F) more than half as much again behind the center of motion, so that when the eye glances outwards the fovea moves inwards about half as fast again as the nodal point moves outwards. A pencil of light from the distant object (O) passes through the nodal point K″ and falls upon the retina at I, about half as far to the right of the sagittal plane (p) as F is to the left of it.*

Fig. 5 gives a back view of Fig. 4, and some of the same letters are to be recognized. The dotted line is the prime vertical meridian of the retina passing through the fovea. The horizontal retinal meridian ("retinal horizon" as Helmholtz called it) is not here shown dotted, because it still coincides with the horizontal plane hh.

If, now, in addition to the exotropia, the eye be made to tort or rotate about its own visual line, the result is as shown in the next figure, which also presents a back view of the eye (Fig. 6). The point p lies at the intersection of the retina with the sagittal plane and the horizontal plane, both of which pass through the center of motion of the eyeball. The four quadrants of the retina are shown in dotted lines, and have experienced a little wheel motion to the right. By comparing this figure with Fig. 4 it will be seen that, since the nodal point K, and the ray of light KI, are not affected by the torsion of the eye, the image is still formed in the horizontal plane, as I in Fig. 6, though the superior temporal quadrant of the retina has moved to receive it. The fovea also remains unchanged in position by the torsion, and also lies in the true horizontal. It is the property, however, of the two physiological dividing lines between the upper and lower halves of the retina, i. e., the two "retinal horizons," that images formed upon them shall be referred to oneness in outward projection, on the same principle that it is impossible for images upon two foveae to be referred to more than one position in space. The mind, therefore, always estimates the two retinal horizons to be coincident, and ignoring the exotropia and cyclotropia, supposes the eye of Fig. 6 to be erect as in Fig. 7, causing the quadratures of the right and left retina to mentally coalesce. It calculates therefore as if the image were formed at I^r, from an object down and to the left, the light from which rises to the rectified image (I^r) through the nodal point. This mental rectification of the eyeball is equal in degree, though opposite in direction, to its actual displacement. The angle C therefore (in Fig. 6) is equal to the cyclotropia, while the arc FI subtends an angle at

---

* The distances from the motor center, in the schematic eye, of the posterior nodal point and of the fovea are usually assumed to be 6 mm. to 9.4 mm., respectively, and I find that the *sines* of the arcs pI and Fp bear the same proportion. The value of pI would increase were the object in the sagittal plane brought from infinity nearer the eye, KI being then no longer parallel to Kp. I very much regret my inability to acquiesce in the law of visible direction as propounded by the famous savant, Dr. Savage, since the laws of refraction are inexorable, and compel the axial rays from a distant object to intersect at the nodal points in their passage to the retina, and from thence, though in the reverse direction, the lines of projection must pass between the two nodal points to strike the distant object from which the axial rays emanate. At least the direction of projection must be parallel with this line in distant vision, proceeding as if from the mental or cyclopean eye of Hering. To suppose that they would intersect at some other point, such as the center of retinal curvature, especially in myopia, would be to condemn the unfortunate owner of this arrangement to perpetual misprojection. Space forbids that I should discuss here the conditions in near vision. The most succinct account of the projection I believe true we owe to Tscherning in the well known text-book which Weiland has well translated for us. Le Conte, too, is admirable, reliable and original.

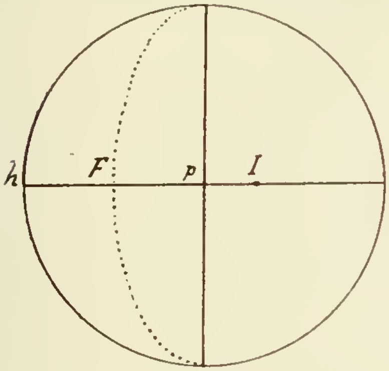


Fig. 5.
Simple exotropia of right eye.

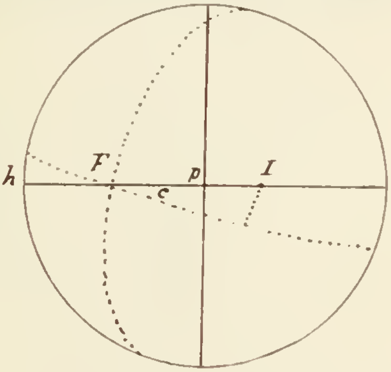


Fig. 6.
Excyclotropia added to the exotropia.

the nodal point, and the arc pI subtends an equal angle at the motor center, which determines the exotropia. This angle is the same as FKI in Fig. 4.

Now let us apply this to practice, and first with naked eyes. In some cases of myopia, though near vision is single, a small convergent squint appears for distance, causing well marked diplopia. Now in such a case, should excyclophoria also be present in near vision, it will, by the parting of the images in distant vision, be there converted into excyclotropia, mostly manifested in the non-fixing eye, just as in the figures we are considering, leading the unsuspecting surgeon to pronounce for hypertropia as well as esotropia, and probably to attribute the latter to the former, and correct the totally fictitious hyperphoria by a vertical prism which is harmful.

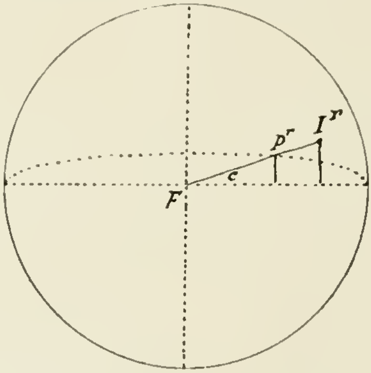


Fig. 7. The eye of Fig. 6 mentally rectified.

Again, when instead of spontaneous diplopia with naked eyes, prisms are used to create artificial horizontal diplopia, in order to investigate the vertical balance, as for instance by a Graefe's prism with base in, or by a Stevens' phorometer with both bases in, if marked cyclophoria be present also in the non-fixing eye but not in the fixing one, it will certainly cause the projection of one image above the other, and again lead to the false diagnosis of hyperphoria. Fig 8 (B) illustrates a single prism, base in, before the right eye, viewed from behind when no condition but cyclophoria pre-exists. The eye itself is not diverted by the prism, but the retinal image is diverted sufficiently far from the fovea to manifest any heterophoria which may be present. In simple excyclophoria as shown, the false image is still displaced directly inwards from the fovea by the prism, but the rising half of the retinal horizon allows the image to fall on an inferior quadrant, and be projected too high into space.

In the figure, the undotted cross represents the lines of demarcation between the quadrants of the rotated retina.

The imaginary cyclopic eye is depicted at (A + B) with the true image at its centre, and the false one occupying the same relative position in the left inferior quadrant of the retina as in B. At (A′ + B′) is shown the projection of the same two images into space, their relative positions being of course reversed. The difference in height of the two images leads to a totally fallacious diagnosis by the phorometer.

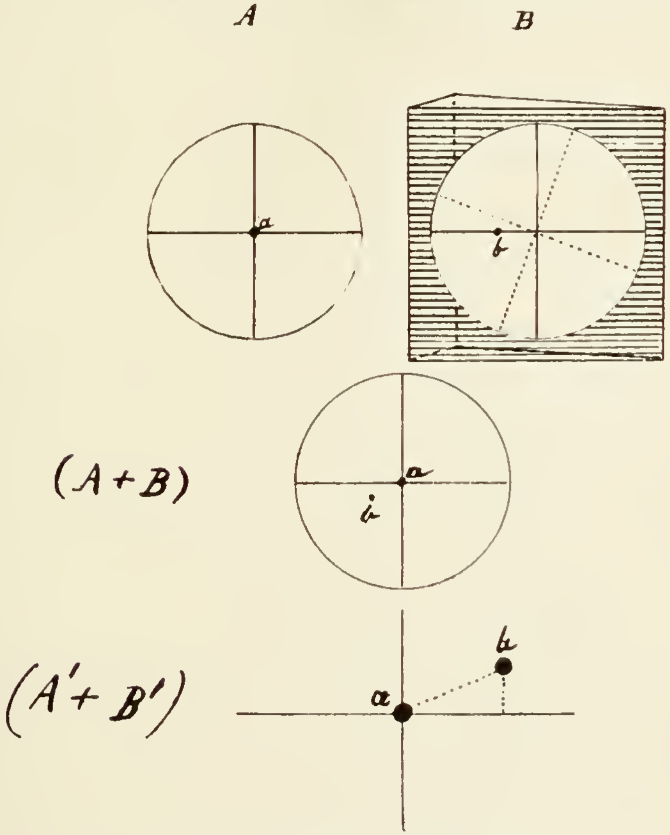


Fig. 8. False hyperphoria produced by a Graefe prism. A is the left eye in normal fixation; B the right eye. The true image throughout is a, the false b.

A little study will show, what may at first sight seem rather difficult to understand, that the slanted line which joins the two projected images, represents the effectivity of the prism, while their difference in height is the false vertical error.

It is desirable that we should have some idea of the *amount* of error, which we could possibly be deceived by, with known quantities of lateral deviation and cyclophoria. Otherwise, we should scarcely know whether the cyclophoria, however carefully measured, would really be sufficient to account for the phenomenon. I have, as shown in the following little table, calculated the figures by spherical trigonometry. The measurements are in degrees of deviation (not prism-degrees, which do not merit perpetuation), and it will be seen, for example, that with 15° of exophoria and 20° of cyclophoria, the false hyperphoria is 5° 15′. The Centrad is an even better unit.

Table of False Hyperphoria in Degrees of Deviation.

Cyclophoria.	Horizontal Deviation			
	5°	10°	15°	20°
5°	0° 26′	0° 53′	1° 20′	1° 49′
10°	0° 52′	1° 45′	2° 40′	3° 36′
15°	1° 18′	2° 37′	3° 58′	5° 23′
20°	1° 43′	3° 27′	5° 15′	7° 6′

This table is made from the equation

$$\text{Tan } y = \text{Sin } c \text{ Tan } E$$

where E is the horizontal deviation by prism or otherwise, y the false hyperphoria, and c the cyclophoria. Hyperphoria is so much more important than an equal degree of horizontal deviation that the table has been drawn up for it, but by substituting the words "vertical deviation" for "horizontal deviation" in the headline, the false esophoria or exophoria recorded by prism-phorometers when the prisms are vertical, is also obtained. The formula becomes then, x being the false horizontal element,

$$\text{Tan } x = \text{Sin } c \text{ Tan } H.$$

In either case the deviation produced by the prism should have added to it or subtracted from it any heterophoria which increases or decreases the displacement of the image in the direction of the base-apex line of the prism, and this compounded amount should be read off from the headline of the table, and constitute E or H in the formulae.

We need to know the *direction* of the false hyperphoria as well as its amount, and, the following chart, though perhaps scarcely necessary, may be helpful. From its inspection the rule can be perceived that the eye falsely appears raised when the prefixes of the lateral and torsional displacements agree, and lowered when they disagree. Thus, for example, the combination of esophoria with monocular incyclophoria causes a false hyperphoria of that eye.

	Incyclotropia	Excyclotropia
Esotropia	False hyperphoria	False hypophoria
Exotropia	False hypophoria	False hyperphoria
Hypertropia	False divergence	False convergence
Hypotropia	False convergence	False divergence

When binocular incyclophoria, or binocular excyclophoria is equally divided between the two eyes, false heterophoria no longer enters, since both images are raised or lowered equally. This is a point in favor of binocular prisms, as in Stevens' phorometer, rather than a monocular phorometer.

Fig. 7 shows how the table has been calculated. It represents a back view of the rectified eye, and we want to know how much vertical departure from the level of the true image the mind will conceive from the position of the rectified image I^r. The mind will make the calculation by surmising the amount of rotation of the globe about its transverse diameter necessary to bring the images level, since static projection and motor redress are proportioned by lifelong experiments. The dotted semi-ellipse in this diagram shows the plane up to which the "retinal horizon" would have to rise, with simultaneous sinking of the cornea to bring the rectified image I^r to fall on the "retinal horizon" and thus be projected level with the image of the other eye. Some reader may exclaim that the semi-ellipse should pass through I^r to effect this, but he will at once see that the pencil of light which painted I^r arrived by way of the posterior nodal point and not through the motor centre of the eyeball, consequently, as the back of the eye rises and the cornea simultaneously sinks, the nodal point sinks with the latter, so that by the time the retinal horizon has come up to coincide with the semi-ellipse, the image I^r will have fallen sufficiently to coincide with both. There is only one radius from the motor centre that *can* be parallel with the pencil of light which forms the false image. The point p^r is the extremity of this radius, and is the point which determines the required elevation of the semi-ellipse. The part of the prime vertical meridian intercepted between the fovea F and the highest point of the semi-ellipse, measures the required elevation of the fovea and it is this, (the true index of hyperphoria) which my table calculates. It should be understood that the motion of the eyeball is not actually made, but the mind has learned by millions of experiments that just this motion would be necessary for the purpose, and calculates accordingly. If, instead of the image being projected into space the measurement of the false hyperphoria were made by finding just that vertical prism which succeeds in obliterating it, the line dropped from p^r upon the retinal horizon would be the one to calculate by, since the prism is not perpendicular to the longitudinal axis of the deviated eye, but perpendicular to the entering light, and thus to the two parallel lines proceeding from I^r and p^r, one to the nodal point and the other to the motor centre, and which have therefore the same direction in space. It will be noticed that the difference is extremely trifling. By treating all angles as if small, I find the following approximate calculation of the amount of the false hyperphoria comes as near the truth as we can ever need clinically. Divide the product of the cyclophoria and the eso- or exophoria, (each in degrees) by 57, or (each in centrads) by 100. This gives the false hyperphoria in degrees or centrads as required.

Putting C for monocular cyclophoria, E for eso- or exophoria, and y for false hyperphoria, then

$$y^\circ = \frac{C^\circ \times E^\circ}{57}$$

or

$$y^\Delta = \frac{C^\Delta \times E^\Delta}{100}$$

Thus, with a horizontal deviation of 20 centrads and a cyclophoria of 30 centrads, the false hyperphoria would be

$$\frac{20 \times 30}{100} = 6 \text{ centrads.}$$

If we now pass from prism tests and prism phorometers to the glass rod test, we shall find ourselves much more happily situated. Owing to the elongated shape of the retinal image, the fallacy of false heterophoria can be avoided altogether, ren-

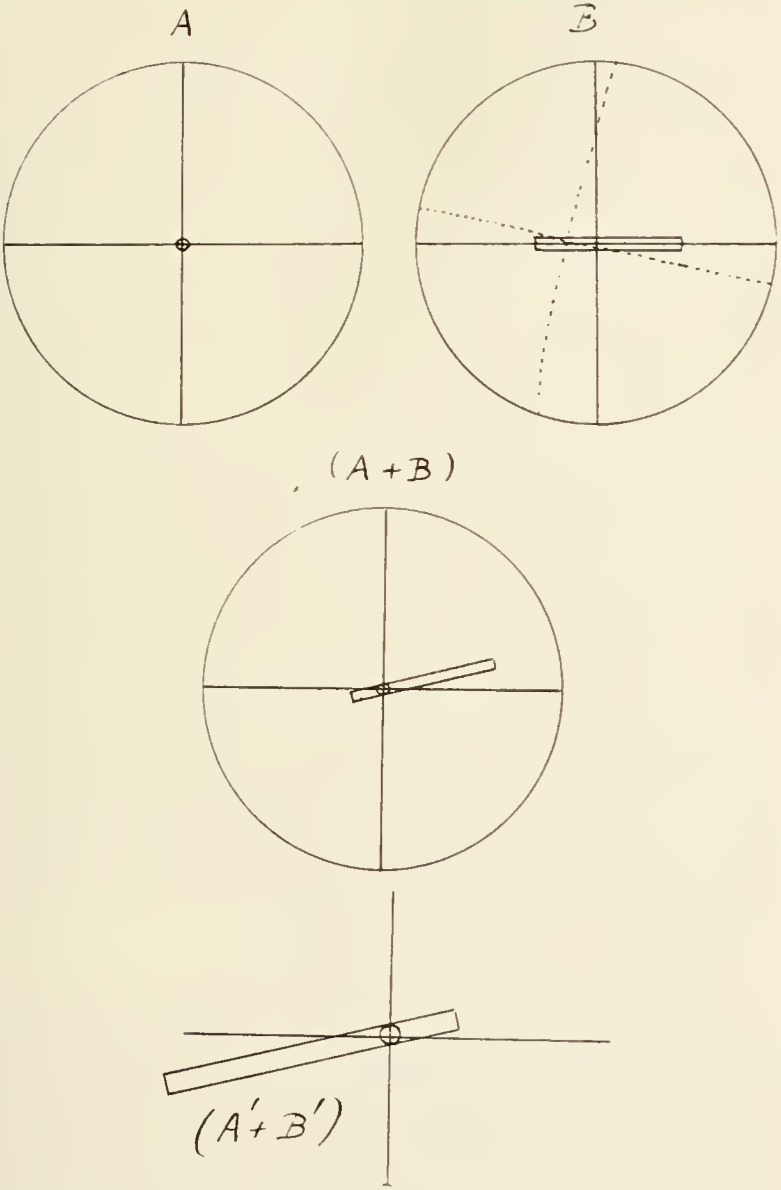


Fig. 9. The glass rods eluding false hyperphoria in an exophoric extorted right eye.

dering any table or calculation needless. All we have to do is to make sure that the glass rods are strictly vertical, and to this end, when not mounted in a phorometer, I now employ for cases complicated with cyclophoria, a weighted disc of rods, swung from a bent handle, so as to remain quite plumb. When thus disposed, the retinal image of the streak remains strictly horizontal, however much the eye may deviate or twist, and if no hyperphoria be present the streak image must of course pass through the fovea, since both lie in the same horizontal plane. Before being led by this study to do correctly, I used to tilt the rods until the streak was projected horizontal whenever the patient complained of a slant, but though this appears a very natural thing to do, and is a good way of measuring the cyclophoria, it necessarily tilts the actual retinal image so as to make it lie either above or below the fovea, and thus create some false hyperphoria, like that of a prism test. In short, *to measure cyclophoria*, the rods should be tilted till the projected streak appears horizontal (the tilt of the rods then agrees with the tilt of the eye), but *to measure hyperphoria,* the rods should be kept vertical, in spite of the projected streak appearing tilted, otherwise, false hyperphoria will be elicited. I regret not having settled this problem earlier. Fig. 9 illustrates what happens when the glass rods are held strictly vertical before the right eye B. The image of the luminous source, instead of falling unchanged upon the fovea as in the left eye, A, forms a linear horizontal image, which lies mostly in the right upper quadrant of the torted retina, and when the right eye is mentally rectified to coincide with the left eye, as in the cyclopean eye (A + B) the hypothetical streak passes through the unchanged image of the luminous source at the cyclopean fovea, the projection into space being as (A′ + B′).

* * *

In nearly all ocular paralyses there is a false element in the diplopia, of the same nature as that we have been considering. It has long been recognized for example, that in paralysis of the vertically acting muscles, the horizontal displacement of the false image does not obey theoretical laws. The explanation hitherto given of this, that a pre-existing, comitant latent deviation (Esophoria or exophoria) has been set free by the paralysis, is surely correct whenever, in a recent case, some horizontal separation makes itself evident by the rod test in all parts of the non-diplopic area of the motor field. But other discrepancies occur, even in the absence of such pre-existing heterophoria, and I think many of these can be explained by the influence of the torsion, both upon the horizontal and the vertical components of the diplopia, in accordance with the chart I have drawn up in this paper. Thus in paralysis of the superior oblique the extorsion and hypertropia cause false esotropia. The complete treatment of this subject however, would be more appropriate for a paper devoted to ocular paralyses, since this article has already probably given the reader enough nuts to crack at one time.

* * *

To sum up, what practical conclusions may we draw?

(1). That false heterophoria need only be looked for in the presence of aniso-cyclotropia (spontaneous or artificial) combined with a swinging deviation, either of the eye spontaneously, or of the image by a prism, or both.

(2). That the amount of this error is a definite quantity, easily calculated by multiplying the two deviations together and dividing by 57 if all in degrees, or by 100 if all in centrads. For small deviations it is trivial.

(3.) That in paralyses of the vertically acting muscles, false elements of the diplopia are always present, the directions of which can be read off from my chart.

(4). That the glass rod test evades false heterophoria altogether if care be taken to keep the rods vertical or horizontal.

THE SCLEROCORNEAL SETON IN THE TREATMENT OF GLAUCOMA.

A preliminary report.*

BY

CASEY A. WOOD, M. D.

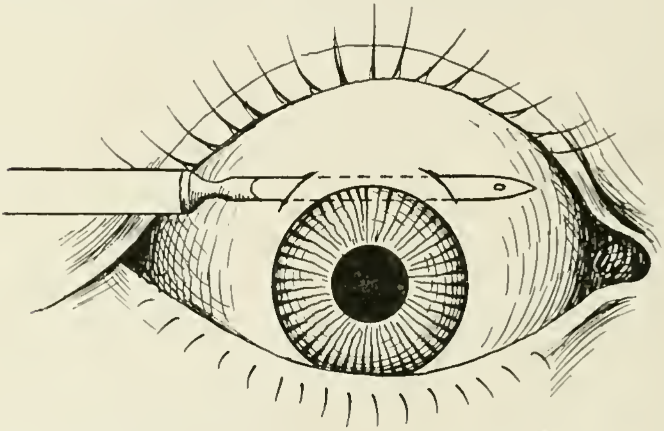
Illustrated.

The procedures of Rollet (*Révue Générale d'Ophtalm.*, p. 481, Nov., 1906), Zorab (*Ophthalmoscope,* p. 258, May, 1912), Mayou (*Ophthalmoscope,* p. 254, May, 1912), and Vail *Ophthalmic Record,* April, 1915), have stimulated the writer to experiment with various forms of the intraocular seton in the hope of securing, if possible, by a method simpler, easier and safer than any of the foregoing, such capillary drainage of the anterior chamber as will insure a uniform and permanent outlet for the pent-up intraocular fluids—that chief desideratum in the treatment of chronic glaucoma.

---

*Presented to the Chicago Ophthalmological Society, April 19, 1915.

Without attempting at this time to develop or discuss the arguments for such a desirable end, let me say that after some preliminary lower-animal experimentation the operation, made on two human subjects and about to be described, was chosen. The results are so encouraging that the writer now presents, in illustration of it, one of the subjects operated on and hopes the method may so commend itself to your judgment that you will give it a trial. For the purpose of this experiment cases were chosen that had failed of relief at my own and other hands by the usual operative measures.

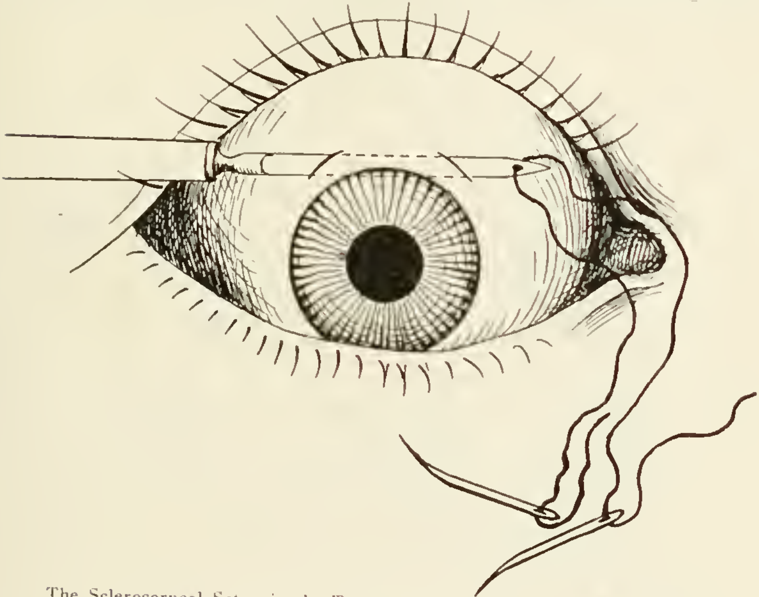


The Sclerocorneal Seton in the Treatment of Glaucoma. (Casey Wood). Introduction of the knife as for an anterior sclerotomy.

The first case (here exhibited) is that of a boy, aged 11, first seen on Nov. 28, 1913. About two years previously he bumped his left eye against the corner of a chair. A concussion cataract formed, which was removed by another ophthalmic surgeon. Some thickened capsule remained. Three months afterwards there was much pain in the eye and the same surgeon did a large, upward iridectomy for the relief of glaucoma. Since then the vision has become steadily worse and the mother thinks the eyeball has grown larger.

The patient has had attacks of pain in the left eye for some time, and the vision is reduced to perception of hand movements. As the tension remained quite plus one, an Elliot trephining operation was done, under nitrous oxide gas and ether, on December 11, 1913. The operative wound healed nicely and the patient did fairly well until about three months ago, when the pains and discomfort in the left eye returned and the tension again rose to plus one. The patient's tonsils and some adenoids were then removed, without effect upon the ocular situation. A month ago, a scleral seton was introduced. The reaction was inconsiderable, and drainage has since been well established. Tension is now normal both under finger pressure and by tonometric readings.

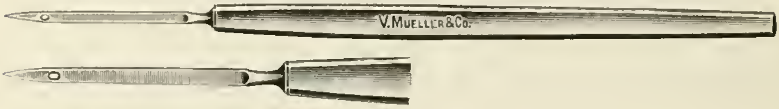
The abbreviated history of the second case is the following: On May 9, 1914, I. R. was seen in consultation with Doctors Wyatt and Brobst of Peoria, Illinois. The case is of congenital bilateral, hydrophthalmus in a girl, aged 4½ years. The child, a nervous subject, has a well-marked and typical buphthalmus. The hazy cornea measures 10.mm. in diameter, the eyeballs are prominent, evidently enlarged, and present bluish sclerotics.



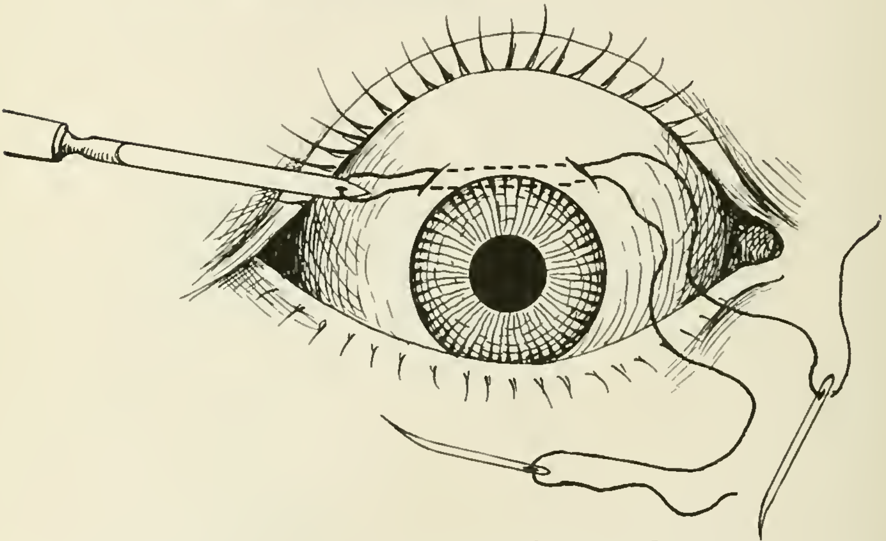
The Sclerocorneal Seton in the Treatment of Glaucoma. (Casey Wood). Threading the knife with a double-needled suture.

Vision was greatly impaired in both eyes. Tension was about plus one on each side; lateral nystagmus; deep anterior chamber, pericorneal injection and photophobia. No clear view of the fundus could be obtained. On June 1, 1914, on both sides and under general anesthesia, an Elliot operation was performed, with good results so far as the operation was concerned. However, the tension, which remained normal for several months, became distinctly raised in the following September, and in spite of massage, eserin and general treatment, the glaucomatous symptoms recurred. On November 4, 1914, the trephining operation was repeated on the left eye, but the oedema filtration bleb that followed was not satisfactory, although the tension became and has since remained normal.

The Elliot operation was followed on the left eye by the introduction of a seton in the right. So far the results are good, the symptoms being relieved and the irritable eye is quiet.

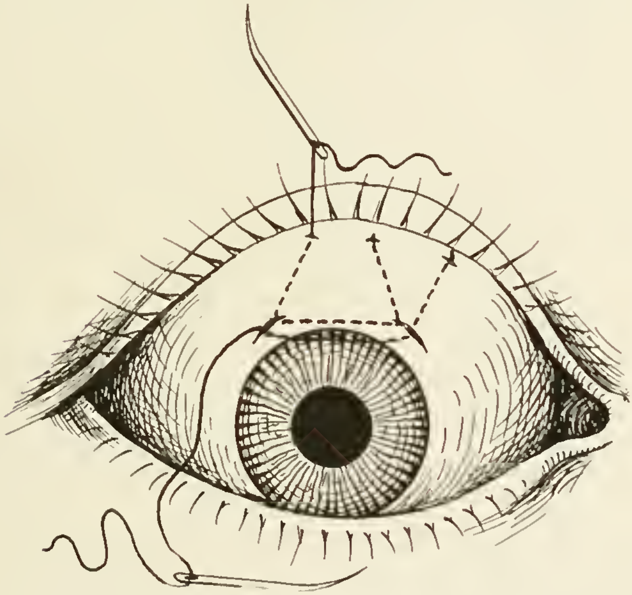


Knife used in Sclerocorneal Seton Operation.



The Sclerocorneal Seton in the Treatment of Glaucoma. (Casey Wood). Withdrawal of the knife so that the cut ends of the suture may be armed with two additional needles.

The procedure adopted in these cases, whose history is thus briefly detailed, may be described as follows: The eye is carefully rendered as aseptic as possible and the pupil is contracted by eserin. A narrow Graefe knife, with a hole near its point, is introduced and passed in precisely the same fashion as in the preliminary steps of an anterior sclerotomy. The puncture and counter-puncture are made entirely in the sclera, but as near the clear corneal margin as possible, so that at least one-half the operative wound communicates with the anterior chamber. When the point of the instrument emerges from the globe at the counter-puncture one needle of a double-armed, white, "oo", braided, silk suture, about eight inches long, is passed through the hole in the knife-point. After a number of trials it was found that a half-curved needle is better adapted to the purpose than a straight one. It should be just large enough to pass easily through the eye of the knife, and should not be more than two-thirds of an inch long. Thus armed, the knife is withdrawn, so that about the same lengths of doubled suture protrude from puncture and counter-puncture. The knife is now freed from the sutures with scissors, and the first needles are with a needle-holder separately passed (by way of the counter-puncture wound) in different directions and for the length of the needle, beneath the ocular conjunctiva. The loose ends of suture corresponding to the puncture opening are then threaded and the same manoeuvre is practised on that side. The so-called split- or patent-eye needle is most useful here, since a wet, sterilized suture can be immediately threaded upon it; otherwise valuable time is sure to be lost in vain attempts to pass *damp* thread through the eye of the ordinary needle.



The Sclerocorneal Seton in the Treatment of Glaucoma. (Casey Wood). Three of the sutures in place beneath the conjunctiva.

It matters not what form of anesthesia be used. It is well to employ a mixture of cocain and adrenalin locally to stanch the bleeding from the scleral wounds.

The accompanying drawings will serve further to explain the steps of the operation.

As this short account is intended merely as a preliminary paper, no claims are made as to the efficiency of this form of sclerocorneal seton; that, of course, will be decided by the lapse of time and by future experience. It may, however, be permitted to draw your attention to the ease and safety of the operation, to the small exposure to sepsis of the intraocular contents and to the complete covering and absolute permanency of the filtration canals. Anybody who can do a simple anterior sclerotomy can easily do this operation.

The writer also ventures to believe that if the aseptic threads do not set up any more irritation and are not more dangerous than the double suture of the Zorab-Mayou procedure there may be a chance, through lining of the seton-canal with epithelium, of eventually withdrawing the threads of the seton in this operation without endangering the patency of the filtration openings. But, of course, all this remains to be seen.

A CASE OF TRAUMATIC ENOPHTHALMOS.*

BY
HOWARD F. HANSELL, M. D.
PHILADELPHIA.

On July 26, 1914, J. B. S., while ploughing, was thrown from his seat on the plough, kicked in the left forehead by one of the horses and was dragged for some yards. When picked up, and for ten days afterward, he was unconscious. He was carried to a hospital, some fragments of the broken frontal bone removed and hernia of the brain cut away. He was seriously ill for some weeks but finally recovered. At the time he consulted me, January 18, 1915, he stated that for the past three months vision had been gradually declining and he was able to see satisfactorily only by looking directly and intently at the object, that all objects removed a short distance from the point of fixation were either out of sight or confused. Vision equalled right 20/20, left 20/50. Both fields were concentrically contracted, the left extending only as far as the 20° mark, the right slightly larger, extending to 40°. The frontal bone on the left orbit was sunken and scarred. The outer half of the lower margin of the orbit was deformed from destruction of that portion of the malar bone. The left eye was retracted at least 10 mm. from the plane of the right eye, rotation downward was limited, the pupils equal and reacting to light, the media clear. The fundus showed no gross changes. By careful inspection the papillae appeared a trifle pale on their temporal sides. The vascularity of the retina presented nothing noticeable. Both arteries and veins were normal in course and calibre. The patient had noticed since the accident frequent double vision and the loss of the senses of taste and smell. The diplopia was vertical and was due to partial loss of power of downward rotation of the left eye. The images were fused by prism 5° base down before the left. He was admitted to the Jefferson Hospital and treated by daily sweat baths, inunctions of mercury and potassium iodide, 30 gr. daily. After the third day the fields increased in all dimensions and the central vision improved in acuity. The treatment was continued uninterruptedly for 12 days when vision in each eye had reached the normal acuity and the fields had nearly doubled in size. The diplopia had entirely disappeared except in the lower part of the field. L. hypertropia of 1° only remained when the gaze was directed forward. He has not recovered taste or smell.

---

*Read before the Section on Ophthalmology, College of Physicians, Philadelphia, February 18, 1915.

The bulbus is so suspended and supported in the orbit that it must in all its movements retain its position; it must rotate around a point. This is possible only through the concerted and coördinated action of all the factors, namely: the capsule of Tenon; the leaf of muscle aponeurosis; the subconjunctival fascia; the orbital fat; both lids; the muscles and their ligamentous outriders; the vessels and nerves.

Exophthalmos because of orbital tumor, orbital bleeding or inflammation is not difficult to explain, but it is quite otherwise with intermittent exophthalmos, traumatic exophthalmos or the exophthalmos of Basedow's disease (Birch-Hirschfeld, G. & S., 2nd Edition).

Enopthalmos may be classified, according to the same author, into two principal divisions: 1. Retrusion by pressure from in front, for example, by a tumor, or weakness of the protractor factors, for example, tenotomy of the oblique muscles, or paralysis of the sympathetic. 2. Retraction by strengthened action of the retractor factors, for example, by paralysis of the obliques, and relative or absolute increase of the retrobulbar space by depression, fracture of the orbital walls, absorption of the orbital fat or traction of cicatricial tissue.

The important symptom in this case was the partial failure and impending loss of vision. Fracture of the orbital walls or apex other than the lower outer margin as mentioned above was excluded by radiographs made and interpreted by Dr. Manges—a most significant factor in the prognosis. Laceration of or pressure upon the optic nerve by fragments of bone means total loss of vision from optic nerve atrophy. Pressure by exudation or blood or traction by cicatricial bands offers a chance for a more favorable outcome. Enophthalmos of moderate degree in itself is not serious. The deformity, the restricted movement and the diplopia are not comparable in importance with optic nerve atrophy.

The group of symptoms presented by this patient assigns his affection to the second subdivision of class B. of Birch-Hirschfeld—absorption of fat and cicatricial contraction. The orbital involvement was secondary to fracture of the frontal and malar bones. The history does not point to any direct injury to the globe and the radiographs exclude fracture of the apex. The severe and nearly fatal traumatism was quite sufficient to cripple the action of the oblique muscles by which the function of the recti became unopposed and to induce moderate cellulitis with perhaps some hemorrhage (exophthalmos may have been present immediately after the accident), eventuating finally in partial agglutination of the retrobulbar tissue. This supposition of the pathologic process seems to be borne out by the effect of treatment. The strangulation or the interference with the circulation of the optic nerve or its displacement by traction of cicatricial connective tissue was materially lessened by the absorption of exudate. The improvement in central vision, the enlargement of the fields and the restored function of the depressors of the ball can be explained only on this hypothesis. Four of the seventy-one cases analyzed by Birch-Hirschfeld support this assumption. 1. Reported by Gessner 1888, a man was made unconscious by a blow on the forehead by a lump of coal. In fourteen days enophthalmos of 2-3 mm. Vision equalled 1/8; upward movement limited. Diagnosis: contraction of the retrobulbar tissues; enophthalmos through mechanical retraction of the bulbus. 2. Low, 1890, male, 40, blow from a horse's hoof on left eye; loss of vision sixth day; scar on inner canthus and orbital edge; enophthalmos 6 mm.; pupil dilated and unresponsive; atrophy of optic nerve; vision 0; rotation upward abolished and limited in all other directions. Diagnosis: cicatricial contraction of retrobulbar tissues. 3. Burnett, 1899, injury from cow's horn; bleeding from nose; scar on upper and lower orbital margins; enophthalmos 3 mm.; fundus normal; vision=1/2; all rotations, except inward, abolished. Diagnosis: trophic disturbance of orbital tissues through wounds of nerves. In this case the enophthalmos was complicated with anesthesia of the supraorbital nerve and flattening of the left half of face. There was no ground for believing in the existence of sympathetic involvement. 4. Collins, 1899, woman 37; blow three years before on upper left maxillary; one year later enophthalmos; scar on outer portion of left brow; fundus normal; vision=1; rotation upward abolished. Diagnosis: cicatricial contraction of retrobulbar tissue through periosteal inflammation.

In addition to the pathologic process excited in the retrobulbar tissue which may be considered the prime cause of retraction of the eyeball following traumatism, either to the eye itself, or to the orbital margins, it is quite clear from the investigation of anatomists that the cuff of plain muscle fibres attached to the septum orbitale anteriorly and to the equator of the eyeball posteriorly and under the control of the cervical autonomic chain becomes temporarily or permanently paralyzed. It has been shown that stimulation of this fascia will cause exophthalmos. Reversely, paralysis will allow uncontrolled contraction of the recti muscles and enophthalmos which later becomes more or less fixed by cicatricial contraction. Birch-Hirschfield refers to practically the same contributing factor when he says that "laceration of the ligaments and fascia which support the globe is an important factor. When these are loosened the tone of the recti will pull the globe backward and this tone is itself probably increased. The prevalence of injuries of the orbital margins down and in is striking in this connection" (Parsons, Vol. IV.). W. T. Shoemaker (J. A. M. Asso., Sept 15, 1910) confirms the hypothesis. He says enophthalmos may be caused: 1. by paralysis of the muscular fibres of the check ligaments; 2. by atrophy or relaxation of these ligaments, and 3. by serious disturbance of any kind of the post-orbital fascia. Again, Weigelin (Klin. Monatsb. f. Aug. Feb. 1914) explained enophthalmos from a severe blow by a cow's horn thus: "The fascia on which the eyeball rests was completely torn, the orbital fat partly crushed, partly drawn forward past the ball and later, became atrophic."

ANTERIOR LENS-RING FOLLOWING CONTUSION: REPORT OF A CASE, WITH THEORY RELATIVE TO ITS PATHOLOGY.

BY
THOS. H. CATES, M. D.
LITTLE ROCK, ARK.

This singular lesion, a rare form of traumatic cataract, was first described by Vossius[1] in 1906. It usually results from contusions of the anterior ocular segment.

Fowler,[2] in abstracting G. Coats'[3] recent contribution, states that twenty-three cases have been reported, though Casey Wood[4] claims that some thirty cases of traumatic annular cataract have been described in the literature.

The following case presented among other features the typical ring opacity, with transitory existence, as is usual under favorable conditions.

Case Report.

M. R., female, aged 19, first presented herself on June 8th, 1914, stating that she had been struck in the left eye by a rock four days previously. She complained of pain in the eyeball and radiating to the back of the head.

Examination revealed a slight swelling of the lids. When closed they also exhibited a partially healed, irregularly shaped abrasion, with an approximate length of 1 cm. and an average width of 0.5 cm. Crossing the inter-palpebral space at about its center—possibly somewhat nearer its temporal end— it extended in a slightly oblique manner from within outward and downward, rather more of its area occurring on the lower than on the upper lid.

Vision = perception of light and shadows; finger tension, + 1; no wound of the globe was visible; moderate amount of conjunctival and ciliary injection; cornea slightly hazy; hyphemia, 2.5 mm. in depth; aqueous slightly turbid above stratum of blood; anterior chamber very deep; iris moderately discolored; pupil ovoid in shape, 4x5 mm., long axis downward and outward.

At about the center of the anterior surface of the lens there was plainly visible by oblique illumination under a strong light a small ring of a distinctly brown color, about 2.5 mm. in diameter, which was seen to be made up of fine granules. The outer margin was quite sharply defined with the exception of a small segment at its upper and outer and again at its lower and outer aspect, at which points the ring was somewhat heavier than elsewhere. The whole of its inner aspect was rather less clear cut but lacking any visible projections to break its fainter outline; while the area within the circle contained throughout many discrete granules of the same color.

The pupil having been further dilated with atropia, a more complete study of the lens was made, and it was noted that the circle was surrounded for an average distance of 2 mm. by many granules of similar appearance, a greater abundance of them occurring in the lower and outer quadrant. They became progressively more indistinct toward the periphery.

By transmitted light the opacities were all more easily seen. The ring presented the same general characteristics as previously noted, except that it appeared heavier, and there seemed to be additional granular opacities further toward the periphery of the lens surface that were not found by the other method. The remainder of the lens was apparently clear.

No fundus details could be observed because of marked turbidity of the vitreous, which contained numerous dust-like opacities.

The patient was seen daily for a time, and as the blood in the chamber diminished and the aqueous regained its full transparency the lenticular opacities became more plainly visible by reflected light. On June 15th, however, some of them appeared slightly fainter; and by this time the vitreous had cleared enough to note the presence of a wide, horse-shoe-shaped rupture of the choroid, involving the macular region and extending practically three-fourths the distance around the papilla.

Shortly thereafter the patient was lost sight of and not seen again until September 14th, at which time the eye was perfectly quiet and the lens wholly clear, but unfortunately, because of the extensive rupture of the choroid, vision was reduced in this eye to the counting of the fingers at one meter.

An interesting point in connection with this case is the fact that there were many punctate opacities in the area within the ring and also external to it, which, as viewed under oblique illumination, were of a decidedly brown reflex.

This circumstance calls to mind the explanation of Vossius, accounting for the brown appearance of the ring which has been observed in some cases, and that of Gifford as to the existence of simple opacities within the ring; and also, incidentally, the theories that have been advanced regarding the mechanism of production of the annular opacity.

In considering the etiology first of the ring opacity itself, reference should be made primarily to the theory of Vossius. This writer's conclusion that the pupillary margin, being forced against the lens, leaves its imprint thereon in the form of a change in the superficial layers of the lens, with a deposit of pigment granules from the iris being responsible for the brown color when present, has not been disputed; although his belief that the center of the cornea is doubled in to the extent of actually coming in contact with the iris, is, as we know, not given general credence by the later writers.

In this connection Gifford [5] has shown, in citing the case of Steiner,[6] that the application of force anteriorly is not even a necessary etiologic factor. In Steiner's case the anterior lens ring was found following a shot in the temporal region, the bullet having passed into the orbit posterior to the globe.

Therefore, as the former writer states, in view of this and other significant cases, we must accept as more convincing the theory of Hoeg,[7] that the opacity is brought about by the sudden elevation of pressure in the anterior chamber, thus pressing the iris against the lens.

Gifford [5] believes that by contact of iris and lens we may also account for the presence of those opacities on the lens surface outside the annular opacity, but that a further explanation is necessary for their occurrence within its enclosure.

He consequently offers an hypothesis attributing this latter phenomenon "either simply to the sudden increased pressure of the aqueous, or to a disturbance of nutrition which the ring itself produces in the tissue within the ring."

However, this leaves unexplained the presence of brown granules in that area. But, if we accept the premise that the ring, when presenting a brown color, contains pigment squeezed from the pigment epithelium of the iris, may we not with reason attribute the occurrence of opacities of that color encircled by the ring to a simple migration of pigment particles from a like deposit in the ring itself?

Indeed, is it not possible in many of these cases in which no brown color is apparent that all of the superficial opacities —annular or otherwise—are none the less largely the result of the presence of products pressed from the pigment epithelium of the iris, the pigment present not being identified as such because of its existence on the lens surface to a slight degree?

We know that transient traumatic opacities in the form of radial lines, nebulae, stars, streaks and the like have been described by Schirmer and others as occurring in the anterior cortex following contusions of the globe as well as punctures of the lens; and also, opaque areas have been found on the anterior surface of the lens, as in the case reported by Löhlein [8] of a disc opacity surrounded by the contusion ring of Vossius. But these comprise more or less continuous lines and areas and are mostly localized opacities; and it therefore seems not so difficult to understand how they might result simply from pressure operating at these points, they being foci of least resistance so to speak. But it is not so easy to apply this explanation to the occurrence of the many distinctly separated granular opacities of the anterior lens surface, nor yet perhaps to attribute the presence of the ring, when it is made up of smaller dot-like opacities, merely to pressure by forcible contact of the pupillary margin of the iris with the lens.

Again, an opacification of tissue within the lens ring, if due to a disturbance of nutrition produced by the ring, would seem more likely to be of a uniform nature, and thus would this theory more conceivably apply to the presence of such a disc opacity mentioned than to that of the more usual ones of a granular character.

As to the cause of the fine opacities sometimes found in countless numbers scattered over the surface from the ring clear out to the periphery of the lens,[5] if contact of iris and lens at all of these points be a sine qua non, then practically the whole of the anterior lens surface, except that part opposite the pupillary space, must necessarily press against the posterior surface of the iris.

May we not consider it likely that tiny particles of matter pressed from the posterior epithelial layer of the iris, mostly at the site of the ring, and migrating to various parts of the lens surface, often not themselves of sufficient size to be easily seen, may, by their presence as foreign bodies, excite superficial changes at these points, resulting in larger granular opacities that are more readily observed?

BIBLIOGRAPHY.

1. Vossius: Ueber ringförmige Trübungen an der Linsenoberfläche nach Kontusionsverletzungen des Auges., Internat. Congress, Lisbon, 1906.

2. Fowler: International Abstract of Surgery, Feb., 1914, p. 189.

3. G. Coats: Opth. Review, Oct., 1913, p. 295.

4. Casey Wood: American Encyc. Ophth., Vol. III, p. 1769.

5. H. Gifford: Ophth. Record, Aug., 1910, p. 412.

6. Steiner: Klinische Monatsblätter für Augenheilkunde, Jan., 1910, p. 60.

7. Hoeg: Klin. Monatsbl. für Aug., June, 1909, p. 595.

8. Löhlein: Zeitschrift für Aug., XX, 1908, p. 364.

A NEW PAIR OF LID RETRACTORS FOR THE CATARACT OPERATION.

BY

DERRICK T. VAIL, M. D.

CINCINNATI, OHIO.

The retractors shown in the photographic illustration, Figure 1, were designed by me for the purpose of perfect lid control in performing the cataract operation. They take all possible weight and spasm-pressure off the eyeball during the operation.

The larger of the two is designed for holding the upper lid and cul-de-sac away from the eyeball in the manner shown in Figure 2, and the smaller of the two may be likewise used in holding the lower eyelid and cul-de-sac away from the eyeball at the same time.

There is a heart-shaped guard near the bend of the instrument, which is designed for the purpose of keeping the lashes from fouling the instruments that are used in the operation.

One of the principal advantages in the retractor holding the upper eyelid is that the lid hangs on *a single bar* so that there is a gable-like exposure above the eyeball, which gives the operator the greatest possible field.

The retractors are held in the manner shown in Figure 2. The handle is short, flattened and corrugated on one side to conform with the natural grasp between the thumb and forefinger and is easily manipulated. There is no long handle to annoy the operator. Should the operator desire to dispense with the lower lid retractor and use the thumb instead, he can do so.

I wish to acknowledge that I am indebted to Lt. Col. Henry Smith of India for the main ideas in these retractors.

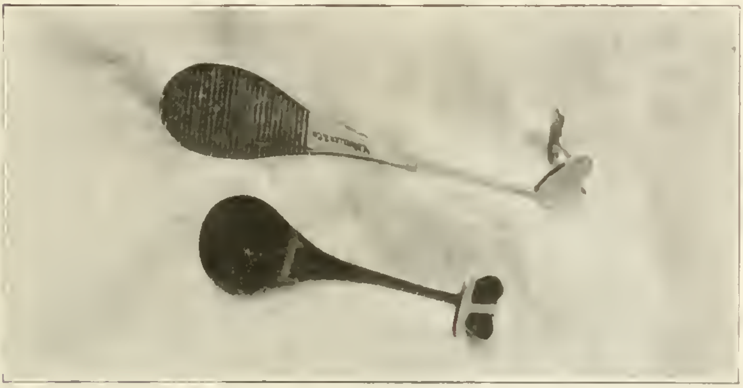


Fig. 1. Showing new upper & lower lid retractors for absolute control of the eyelids during the cataract operation.

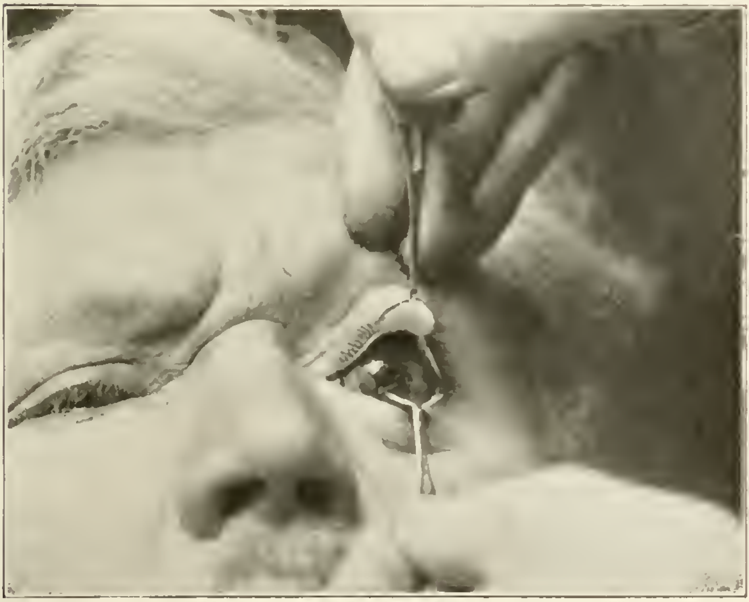


Fig. 2. Showing the Retractors in proper position.

The instruments are made by V. Mueller and Company, 1775 Ogden avenue, Chicago.

HOLE IN THE DISC ASSOCIATED WITH VIBRATION OF AN OVERLYING MEMBRANE.

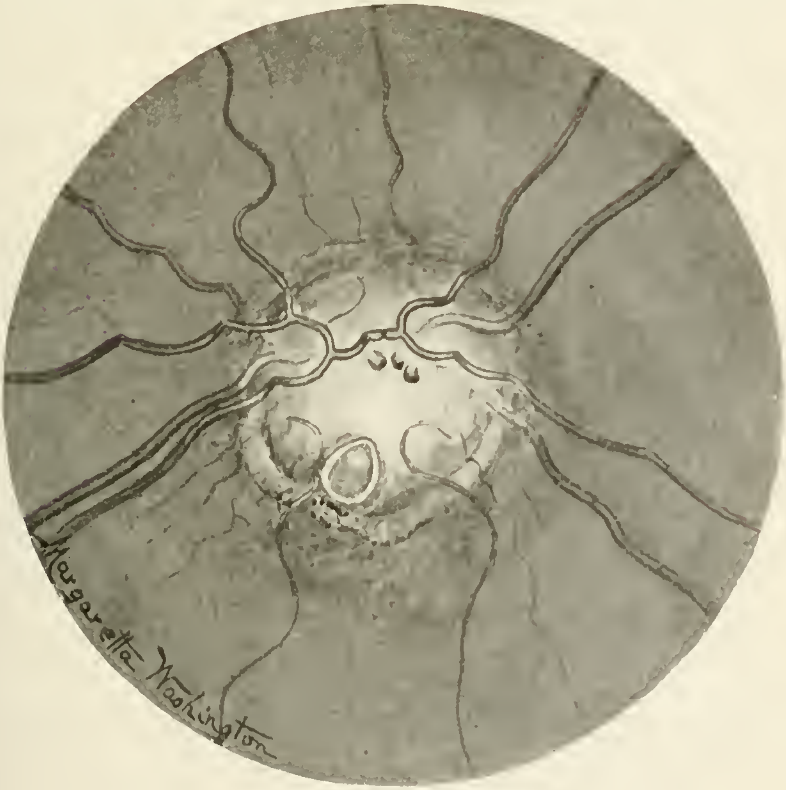
BY

T. B. HOLLOWAY, M. D.

PHILADELPHIA, PA.

The condition about to be referred to, known as crater-like hole in the disc, is an anomaly that is of infrequent occurrence, as is shown by the fact that Reis encountered but five cases among 55,000 cases seen at the Bonn clinic during a period of ten years. This at least warrants the recording of the present history, particularly so since it refers to a certain phenomenon not previously observed in connection with this lesion.

H. A. S., age 19, a student at the University of Pennsylvania, came to the clinic on the 18th of December on account of vague asthenopic symptoms and squamous blepharitis. Aside from a slight inequality in pupils, no changes were noted except the condition about to be described. The left disc was slightly oval, with the long axis slightly oblique. There was a narrow crescent out. Situated in the lower outer quadrant of the disc was an egg-shaped pigmented area with its long axis corresponding to the long axis of the disc. A portion of the nerve between the exit of the vessels, which was slightly eccentric up and in, was distinctly pale and appeared as though there were a shallow groove extending down and out, the peripheral portion of which was occupied by this pigmented area. The periphery of the lesion corresponded to the margin of the disc and in size it was about one-third the diameter of the papilla. Just within the margin of the pigmented area there was a delicate white oval. The lesion was greenish black in color, appearing as though the tissues had been saturated with a soluble stain rather than being the seat of the ordinary pigment deposit. It conveyed the impression of an excavation, as one could distinguish a sloping of the margins to the position of the white rim. In attempting to determine the depth of the supposed excavation, careful examination detected a pulsation of a small milky area, doubtless a reflex, situated somewhat eccentrically up and in from the center of the lesion. The direction of the pulsation was in the long axis of the hole. It was noted that a gray veil covered the supposed excavation and extended to the white linear oval. I was uncertain at the time whether this pulsation was due to a reflex produced by a wave-like motion imparted to this overlying membrane or whether we were dealing with a cystic condition, and a tag of fibrous tissue attached to the inner wall was being driven outward by an impulse imparted to the inner wall of the cyst; this of course would assume that the membrane was translucent. At a subsequent and more careful examination with suitable manipulation of the light a faint pulsation could be detected over the whole membrane. Extending from the temporal side of the disc were two cilio-retinal vessels, the convexities of the hooks being directed towards the lesion. The hook of the lower of these two vessels dippd over the lower margin of the hole. The vision of the right eye with +.50 cyl. ax. 90 = 6/5. The vision of the left with +.62 cyl. ax. 120 = 6/5.



Hole in the Disc with Overlying, Vibrating Membrane.

In 1908 Coats and Reis gave a complete resumé of this subject. Since then histories have been reported by Carr, Lauber, Frenkel, Prediger, Wessely, Gebb, James and C. Williams. Naturally these lesions vary somewhat in shape, while in size they are usually less than one-third of the disc diameter. They are almost invariably unilateral, although in Stood's case there was a bilateral lesion. As a rule, the lesion is in the temporal portion, frequently in the lower quadrant. In the cases of Wiethe and Prediger two holes were present in the same disc. In some of the cases vessels either emerge from or pass into the excavation; such was the case in Williams' patient, where two small vessels emerged to pass to the macular region. Several previously reported histories have described these unusual vascular peculiarities, but the lesion has not been found associated with other congenital anomalies, aside from conus "nach unten" as described by Lauber, although this last observer, with Reis and James, referred to acquired macular changes. The vision is usually found to be normal. Stood and Lauber have reported paracentral scotomata, but in the patient whose history is here reported no pathological field phenomena were found.

In many instances it has been possible to measure the depth of the excavation, but in Wiethe, Reis and Stephenson's cases a gray veil was present as in my patient. The unique feature in the case here described is the pulse-like movement noted over the lesion. Concerning this it may be pointed out that Coats has examined microscopically two eyes in which he thought the lesions present could be ascribed to holes in the disc. In his first cases the hole extended backward through the lamina cribrosa, coming into relation with the inner aspect of the intervaginal space, finally terminating in a large, irregular cavity. Within the cavity were found distorted retinal remains. On reaching the colobomatous area the central vessels were displaced to the side opposite the lesion. Judging from the character of the pulse-like phenomenon apparent in my case, it seems quite likely that the central vessels lie in more intimate relationship with the walls of the excavation and that this pulse-like appearance is produced by an impulse transmitted from the central vessels to the overlying membrane. While the presence of fluid would not be essential to the development of this phenomenon, its presence would seem to facilitate its production. It will be noted in the accompanying drawing that the exit of the vessels from the surface of the disc is about one-third of a disc diameter from the nearest margin of the lesion, so that the vessels must have undergone considerable deviation or the cavity extends towards the central portion of the nerve in the form of a pocket. As above intimated, the direction of the wave or pulse-like motion would seem to exclude any other origin.

Opinions have varied as to the etiology of this condition, Lauber accepts the views of earlier writers and regards the lesion as a partial coloboma of the nerve head. Wessely advances the theory that it is atavistic, and he believes the pits to represent vessel funnels of cilio-retinal vessels, the contents of which have partially or entirely disappeared. Coats believes that the condition "arises by the evagination of a portion of the secondary optic vesicle into the nerve, or more probably, by the abnormal differentiation of a part of the neural division of the vesicle into pigment epithelium and retinal elements." He does not believe that it is necessarily connected with the foetal cleft, a view entertained by others.

BIBLIOGRAPHY.

1. Coats: Royal London Oph. Hosp. Rep., 1908, XVII, p. 178.
2. Reis: Zeitschr. f. Augenhk., 1908, XIX, p. 505.
3. Carr: Ophthalmoscope, 1909, VII, p. 742.
4. Lauber: Zeitschr. f. Augenhk. 1909, XXI, p. 494.
5. Frenkel: Ann. d'Ocul. 1909, CXLI, p. 101.
6. Prediger: Zeitschr. f. Augenhk., 1909, XXI, p. 308.
7. Wessely: Arch. f. Augenhk. 1909-10, LXV, p. 98.
8. Gebb: Arch. f. Augenhk. 1910, LXVII, p. 278.
9. James: Oph. Rev., 1913, XXXII, p. 38.
10. Williams: Ann. of Oph. 1913, XXII, p. 638.

For reports prior to 1908 see Coats and Reis.

REPORT OF A CASE OF REFLEX OCULAR DISTURBANCES DUE TO IMPACTED THIRD MOLARS.

BY

HOWARD V. DUTROW, M. D.

DAYTON, OHIO.

F. A. D.—Age 22, American, single, occupation bridge builder, consulted me on September 24, 1913, for pain and a peculiar drawing sensation about his eyes. At this time there was no Exophoria or Esophoria. His refraction with a cycloplegic was + .50 Sph. before each eye, which gave him normal vision plus.

Rhinoscopic examination showed a marked angular deflection of the septum to the left which jutted into the Inferior Turbinate. A sub-mucus resection was advised and performed. The above prescription for lenses was given, with directions to wear them constantly, together with grains 1/30

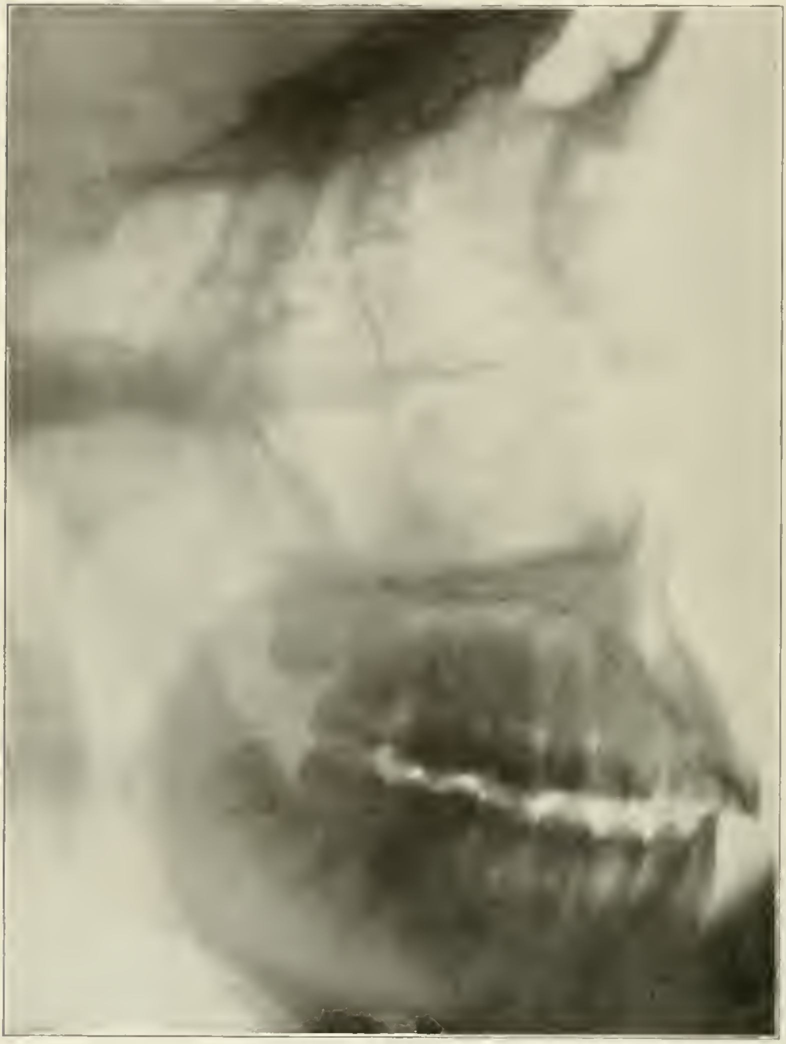


Plate No. 1. Lateral Skiagraph Showing the Nasal Accessory Sinuses and the Impacted Inferior Right Third Molar.

of Strychnine three times a day. In two weeks he reported slight improvement and was advised to continue the use of the Strychnine.

Nothing more was heard from the patient until February 14, 1914, when he returned to my office very much discouraged with his condition. He gave a history of having had several attacks of severe headache, followed by vomiting, which relieved his headache temporarily. At this time he had a complete paralysis of the left External Rectus muscle. The right eye was elevated and rotated inward, due to the spasmodic contraction of the Superior Rectus and the Superior Oblique. The Fundi were normal. He gave a negative history for venereal diseases, but the indications pointed so strongly to Cerebral Syphilis that a Wassermann reaction was made, which was entirely negative.

Skiagraphs were taken of the Nasal Accessory Sinuses, which, as you can see from the print, were entirely negative. But it was by the use of the X-Ray that we were able to locate the real cause. The plates show very clearly the position of the impacted third molars; their relationship to the surrounding structures shows that their eruption was a physical impossibility. The patient was referred to a dentist for extraction of the impacted molars, which was accomplished with considerable difficulty under gas anaesthesia. Within a few days after the extraction, the patient was improved generally. His headache was less intense; his gastric symptoms had almost entirely disappeared and there was an appreciable improvement in the ocular muscles involved. Two weeks after the removal of the teeth there was an almost complete outward rotation of the left eye. The spasmodic contractions of the Superior Rectus and Superior Oblique of the right eye were less marked and within a month muscle balance was entirely normal; the gastric symptoms were absent and the headaches were entirely gone.

This case clearly belongs to that class of remote reflex disturbances and proves the necessity in obscure cases of utilizing every means at our disposal to arrive at an intelligent diagnosis.

The X-Ray picture of the Nasal Accessory Sinuses in this case shows up remarkably well; especially striking is the depth of the Frontal Sinuses.

922 Reibald Building.

A survey of the trachoma situation in Tuscaloosa county, Alabama, is being made by the U. S. P. H. Service.

REPORTS OF SOCIETIES

WILLS HOSPITAL OPHTHALMIC SOCIETY.

WILLIAM ZENTMAYER, M. D., CHAIRMAN.

November 10, 1914.

A Contracted Socket Enlarged by the Method of Maxwell.

Dr. Burton Chance exhibited a Contracted Socket enlarged by the method of Maxwell, of Dublin. The patient, a woman of fifty-eight years, had had her left eye removed many years after a severe injury. She has been under observation interruptedly for fifteen years. Within the past year, she reported, after a lapse of several years, because the socket had contracted so much that no sort of eyeball could be held in place. Two dense, pillar-like bands connected the upper and lower mucous surfaces. These were bisected, in the manner devised by Dr. Berens; and this procedure deepened the space somewhat. Six months later, an island of tissues from the lower lid was implanted into the socket through an incised space connecting the orbital sulcus with the skin of the lower lid. The socket was thus enlarged to a degree equal to the area of the transplanted skin. A paraffin-covered lead plate was inserted, and worn continuously. The four sutures from the socket, and the five from the external surface of the lid, were removed on the seventh day. The union of the lid was all that could be wished for. The lid was no longer drawn into the orbit, and a modified glass-eye was worn for two weeks, when it had to be removed because a sinus had formed at the anterior line of union of the skin and mucous membrane, through which the discharges burrowed and pointed on the outer surface of the lid. This was healed, and a somewhat larger shell can now be worn. Further operations are intended, to widen the space under the upper lid.

Divergent Strabismus.

Dr. Chance exhibited a case showing the result of straightening a widely divergent eye by means of the excision of conjuncto-capsular tissue and the tenotomy of the opposite rectus muscle. The divergence was secondary to a complete tenotomy many years previous to her coming under Dr. Chance's observation. The eye was practically sightless, also, from extensive atrophy of the choroid.

The operative procedures consisted in the excision of an elliptical area of conjunctival and capsular tissues down to the sclera. The tissues were grasped in a quite wide fold within the jaws of a crutchhead shaped forceps. The surrounding tissues were loosened, and the edges were then united by four sutures. The external rectus was afterwards completely tenotomized. The reaction was but slight, and the sutures were removed on the seventh day. The result was perfect.

Raising of the Upper Lid, Associated with Abduction.

Dr. Chance exhibited, also, a man with paresis of the external rectus muscle. In this case, when efforts at abduction were made, the fissure became much wider, through the contraction of the levator.

Diplopia, due to paresis of the right externus, had come on suddenly, three years before. A remission had taken place after a few months, followed by a recurrence a year later; and these symptoms have persisted ever since. The diplopia was homonymous, most pronounced for far-distant objects.

The man, whose age is forty-two, could read easily at close range. There were no evidences of internal paresis. The fundi were healthy, the visual acuity for each eye equaling 5/7.5.

The brows had become elevated, which could be verified by comparisons with early photographs. There was an esotropia of ten degrees. Ocular movements of each eye separately were complete, except that outward and upward rotations were slower in the right than in the left eye. When the right globe reached the median line, the upper lid perceptibly uncovered the cornea; and when it reached the outermost limit, the fissure became greatly widened. There was neither ptosis nor retraction of the globe. All the signs have become less since the patient has taken progressive doses of sodium iodide. He assigns the causation of the symptoms to a shocking grief. He has several children, and denies specific infection.

DISCUSSION. Dr. Zentmayer said that he had done this ingenious operation of Maxwell several times, and always with the happiest results, so far as he had been able to follow the cases. It can, he stated, be done for the restoration of the superior cul-de-sac also. He performed it once for that purpose, but found it more difficult than for the inferior; as one must take care of the tendon of the levator, which is detached by the incision through the lid. A temporary ectropion sometimes results. After operating upon the inferior cul-de-sac, this may be avoided by making the elliptical piece of skin narrower than is usually advised.

Dr. Posey said that he had performed the Maxwell operation in two cases, having been led to adopt it at the instance of Mr. E. Treacher Collins. The deformity was perfectly overcome in each instance. Dr. Posey considered the operation comparatively simple. He also commended the Wiener procedure, but preferred the method of Weeks in all cases in which the socket is contracted *ad maximum.* He had found the method devised by Berens, that of dividing and utilizing cicatricial bands, of much service in many cases of slight contraction.

Congenital Aniridia.

Dr. S. D. Risley presented a case of Congenital Inherited Aniridia. The defect had been traced through four generations of an unusually prolific family. In 117 descendants, with 234 eyes, there were 217 eyes with aniridia. Of the remaining 17 eyes, two of them were known to have had cataract; and nothing was known concerning the remaining 15. In the case presented, there was not only aniridia, but also aphakia and detachment of the retina.

O'Connor's Operation.

Dr. Zentmayer presented a man who had no less than 30° of divergent squint in a leucomatous eye. All but about 10° had been corrected by the shortening of the internus, with a simple division of the insertion of the externus. Had the eye possessed good vision, the results would have been even better. The good results obtained by this method may, in part, be due to the fact that the central tongue of the tendon is advanced and allowed to become adherent in the exact position to which it is brought, so that all strain is taken off the suture used to advance the tendon by the two shortened lateral tendinous strands.

Detachment of the Retina.

Dr. William C. Posey exhibited a man fifty-three years of age, with double detachment of the retina in hypermetropic eyes, without apparent causal factor. Both retinas were opaque and swollen, and the retinal veins much engorged. Both discs were obscured by the detachment. Dr. Posey thought it likely that the detachment had resulted from some obscure choroidal disease, which further study of the case might disclose.

Syphilitic Neuro-Retinitis.

Dr. Posey also exhibited a man with severe neuro-retinitis from syphilis. Both nerves were moderately swollen; the retinal vessels, tortuous and, especially the veins, engorged. There were no hemorrhages or extravasations, both retinas being apparently symmetrically swollen by diffuse infiltration. Vision was reduced to the perception of hand movements at a few inches. Lues had been contracted ten months previously. After energetic treatment with mercurial inunctions, potassium iodide and pilocarpin sweats, vision had risen to 5/100 in each eye. There was a large absolute central scotoma in the right eye, and a paracentral one in the left.

DISCUSSION. Dr. Schwenk said that in some cases of detachment of doubtful origin, he laid great stress upon transillumination. Not many days before, a man had been sent to him from a distant city, for lens extraction. From the expression of the eye, Dr. Schwenk decided to defer the operation; and, as the result of transillumination, the case was diagnosed as a new growth. Upon removing the eye, a tumor was found. The cataractous lens was undoubtedly secondary to the growth. In cases in which it is possible to employ it and in which the diagnosis is undetermined, Dr. Schwenk has found it of great value.

An Elliot Operation with Complications.

Dr. Paul J. Pontius presented a case showing a complication during the Elliot operation. On the 25th of October, 1914, the patient was injured while cutting wood, a splinter of which struck his eye. He came to the hospital one month later, and much of the inflammatory condition was absorbed. The pupil was filled with lens material, and the tension was plus 3. He was suffering great pain.

The case was treated for a few days; and, as the tension did not subside, an operation was suggested. The following clinic day, an Elliot operation was performed. The dissection of the cornea was commenced and was almost completed, when the patient turned his eye up; and a corneal perforation resulted. The dissection was carried off to the side; and a 2 mm. opening through the cornea was established, with a complete iridectomy.

Recovery was good. The man, who had practically no vision, is able now, without the least difficulty, to count fingers and discern objects.

Recurrent Sarcoma of the Orbit.

Dr. Frank Fisher presented a case in which an orbital growth had been removed, together with the eyeball, over three years previously. The microscopic examination at that time showed a round-cell sarcoma of small size. There was a rapid reappearance of the growth subsequently, and the whole orbit filled. In July, 1912, this mass was removed, the whole orbit being cleared back to the periosteum; and a mass ½ to 1 inch in diameter was found at the apex of the orbit. Until February, 1914, there was comparatively little reappearance of the growth. The growth is still there, and rapidly increasing in size, and there is a distinct pulsation throughout the whole mass. Dr. Fisher said that he had refused to remove this growth, because at the previous operation he had found that there were arterial and venous anastomoses, the blood coming from vessels almost the size of small lead-pencils, and the man nearly dying from secondary hemorrhage. The growth was undoubtedly a sarcoma. Within the last two months, Dr. Fisher had applied electrolysis, with good results. It had diminished the pulsation of the mass, and had also diminished the venous congestion.

Proptosis with Sudden Blindness.

Dr. Fisher exhibited a patient who had come to the hospital on October 20, 1914, with proptosis and absolute blindness of the left eye, dating from about the 13th of that month. He was admitted to the hospital on October 22d. Ophthalmoscopic examination revealed, in the left eye, an optic atrophy, which seemed to be the subsidence of an intense neuritis. The man was married, but had no children; and the Wassermann test was positive. On October 29th, an incision was made, so as to examine the orbit with a view to ascertaining whether there was sinus disease or degeneration of the bone anywhere. Further examination of the orbit revealed nothing more than a small mass on the temporal side of the nerve, far back in the orbit, and an apparent increase in the size of the optic nerve. Dr. Fisher put in a drainage pledget; and redressing showed no pus in the orbit. On November 1st, the patient complained of some slight difficulty; and on November 2d, declared himself blind in the right eye. This continued until the 9th; and on the 10th, the man could count fingers at about eighteen inches. The ophthalmoscope revealed a slight congestion of the optic nerve on the right side, but no atrophy; and there was a normal relation between the two sets of blood-vessels. The treatment had consisted of mercurial inunctions and iodide of potassium. Either from the relief of tension in the orbit, which had no apparent cause, or from the later use of mercurial inunctions or the iodide of potassium, the patient had been comparatively free from pain. Prior to this, he had had pain, neuralgic in character, over the fifth pair of nerves, and intense nocturnal headache. On November 1st, the loss of vision was sympathetic in character, and attributed to atropin, which had been instilled; but this progressed until November 2d, when he saw shadows only at six inches.

The X-ray proved negative; and on making an incision into the orbit, the bone was found to be normal. That is, there was not sufficient sinus disease to give rise to trouble in the orbit. The presence of the negative X-ray was an interesting feature of the case.

DISCUSSION. Dr. Zentmayer said that when he had first seen this case, through the kindness of Dr. Fisher, he had been under the impression that it was one of ethmoiditis. The subsequent course of the case and the result of the exploratory operation were against this view. He thought it possible that there was a growth in the anterior lobe of the brain.

Dr. Posey advised a careful X-ray study of the head of the patient.

WILLS HOSPITAL OPHTHALMIC SOCIETY.

S. LEWIS ZIEGLER, M. D., CHAIRMAN.

DECEMBER 7, 1914.

A Case of Epithelioma of the Lid.

Dr. William Campbell Posey showed a case of Epithelioma of the Lid that was being treated by Dr. S. D. Risley by means of the X-ray. The patient had been previously treated by another physician, who had prescribed a salve. This did not, however, help the condition a great deal. Dr. Posey stated that if he were treating the case, he would operate, cutting out all the diseased tissue, and turning in a flap from the temple; even though this operation would probably lead to the loss of the eye, the inferior cul-de-sac having been wiped out, and the growth extending far back.

Report of a Case of Uveitis of Metastatic Gonorrheal Origin.

Dr. Posey then gave the notes of a case of an eye lost from uveitis, probably in consequence of metastatic gonorrhea.

Although he had not seen the case at its commencement, he had been informed by the practitioner having the patient in charge that the initial ocular symptoms consisted of a thickening and redness of the pericorneal scleral tissues. Bulbar chemosis soon developed, and a number of small brown ulcers appeared at the corneal limbus. Despite active local and constitutional treatment, the cornea rapidly melted away, and perforation occurred. Enucleation was demanded. There was a history of a specific urethritis about twenty years previously, followed by various urethral complications and rheumatism affecting most of the joints of the extremities. Anti-gonorrheal bacterines were used without avail, although a synovitis that appeared at the right knee coincidently with the ocular inflammation yielded rapidly to the injections.

Dr. Posey referred at some length to the ocular manifestations of metastatic gonorrhea, and said that in his practice he had encountered quite a few instances of conjunctivitis from such an origin. He had seen involvement of the cornea in several cases. Gonorrheal rheumatism, too, he considered one of the most frequent causes of iritis. He had usually observed marked improvement in the local symptoms following the use of the bacterines.

DISCUSSION. Dr. S. Lewis Ziegler asked Dr. Posey whether any micro-organisms had been found in the tissues of the eye.

Dr. Posey replied that this had not been tested, the eye having come away piece-meal as soon as he tried to take out the cornea.

A Case of Disciform Keratitis.

Dr. J. Milton Griscom exhibited a case of Disciform Keratitis. The patient, aged forty-nine years, had first complained of a small spot, interfering with his vision, about three months previously. There was no redness of the eye nor pain. Two weeks before coming to the hospital, the right eye had become painful and very much inflamed, with marked reduction of vision. On admission to the clinic, there was marked ciliary congestion. The cornea showed a central area of whitish infiltrate, 3x4 mm. in extent. It was disciform in shape, and located in the superficial layers of the corneal stroma. The infiltrate had a sharply defined margin, and was surrounded by a zone of fine branching lines of infiltrate. The corneal epithelium was somewhat roughened, and there was a central pinhead-sized, depressed area, which was covered with epithelium. There had been no material change during the past two weeks of treatment, which had consisted in the local application of atropin, dionin and hot stupes, and the internal administration of an alterative tonic.

DISCUSSION. Dr. William Zentmayer showed a water-color sketch that he had exhibited at a meeting of the College of Physicians two years before. He did not think that the members of the Society had ever seen it, and offered it to exemplify some of the points in Dr. Griscom's case—especially the little, fine radiating lines, which, he said, had shown very clearly in the dark-room. He stated that Fuchs had called attention to these lines, which are believed to be due to wrinkling of Descemet's membrane, and said that the condition had first been described as "cold abscess." Although some experimental work that seemed to bear out this view had been done with vaccine virus, Peters had afterwards come forward with evidence pointing to a neuropathic origin; and Verhoeff had subsequently arrived at the same conclusion. Dr. Zentmayer believed the condition more likely to be microbic in origin.

Transillumination in the Negro Race.

Dr. Griscom read a note on Transillumination in the Negro Race, in which he stated that, about three years before, while endeavoring to determine the nature of an intra-ocular growth in a negro patient, under the service of Dr. S. Lewis Ziegler, at the Wills Hospital, he had found it impossible to transilluminate any part of the eye under examination. As a means of comparison, the opposite eye, which was normal, was tested; and it, also, was found to be impervious to concentrated light placed over any portion of the globe. Further investigation revealed the fact that the pupillary glow in an eye subjected to the transillumination test was much reduced in the negro race; and in many cases, was entirely absent. This reduction in the main was found to be proportionate to the intensity of the skin pigmentation; but this was by no means an invariable rule. The foregoing observation was recorded by Dr. Griscom on account of its medico-legal, as well as its clinical, significance. He stated that the explanation lies in the fact that the uveal pigment, which does not transmit light, is normally more dense in the negro. In his opinion, the blocking of the light-rays in persons of that race is entirely physiological.

DISCUSSION. Dr. Zentmayer considered this an important clinical observation, which, he thought, should be borne in mind in cases suspected of intra-ocular growth in the negro race. He asked how many cases Dr. Griscom had tested in order to check up his observation, saying that this test should be made in other cases, so as to determine whether all colored persons show the same negative result to transillumination.

Dr. Griscom replied that, after the observation had been made, he had, for about two months, tested every colored person that had come to the clinic. At least one hundred eyes had been tested by him in this work; and he thought that the condition is of fairly regular occurrence. He stated that while the intensity of the illumination is reduced in colored individuals, the result of the test is not always entirely negative. In some cases, however, he said, the light-rays are entirely cut off.

A Case of Interstitial Keratitis.

Dr. Charles R. Heed exhibited a case of Interstitial Keratitis. The patient, a young colored woman, showed a very decided vascularization of the cornea, of the salmon patch of Hutchinson type. She had been in Dr. Sweet's clinic since October 23d, so that the condition was of less than two months' duration, the eye having been sore but two days when she came to the clinic. The appearance at that time had been that of a fascicular keratitis. A few vessels in the conjunctiva were congested at the limbus; and then, extending from the limbus three millimeters into the substantia propria of the cornea, there was a gray infiltration, the base of which was triangular in outline. The infiltration was two to three millimeters in size. The condition progressed quite rapidly from that time on. The patient was put under atropin, and a Wassermann examination was made. The test was positive in result. Within ten days' time, the infiltration of the cornea took on a yellowish appearance, much like that of a suppurating condition. The vascularization was almost universal in extent, and there appeared the bluish tint of episcleral injection. The patient was admitted to the hospital, and sweats were given her, with inunctions twice a day for a week. Then she left the hospital. Since that time, she has been using inunctions and local treatment with atropin. The corneal infiltration has cleared up very much. Dr. Hood stated that the patient is twenty-two years of age, and has been married four years. She has had no children, and there is no history of any luetic condition. Five other children in the same family are all healthy and well. When ten years of age, her eyes became sore. They remained so, off and on, for two years; but there was no evidence in the right eye of any interstitial trouble.

DISCUSSION. Dr. Posey inquired whether the patient had Hutchinson's teeth.

Dr. Heed replied in the negative, and stated that there were no signs of hereditary lues. A diagnosis of acquired interstitial disease was made from the fact that one eye alone was involved, that there were no hereditary signs of lues, and that the onset was late.

J. Milton Griscom, M. D.,
Secretary.

THE PITTSBURGH OPHTHALMOLOGICAL SOCIETY.

January 4th, 1915.

Cataract From Excessive Heat.

Dr. Wible presented a man, age 34; in April, 1913, his left eye was struck with a piece of orange rind and a cataract developed in a few days. Free needling in June did not produce any absorption of the lens but a second needling in July was followed by a gradual absorption of the lens with a final visual result of 20/10 with +13.00 D. The right eye was normal and the media entirely clear until December when deposits began to appear on the posterior capsule; these slowly increased until at the present time an irregular mass covers the posterior pole of the lens, producing marked impairment of vision. The patient had been employed as a chainmaker, working over hot iron eight hours a day for many years. There being no other probable cause to account for his condition, which in appearance was typical of "glass-blowers' cataract," Dr. Wible was of the opinion that the prolonged exposure to great heat was the etiological factor.

Unusual Foreign Body in the Orbit.

Dr. Heckel reported the case of a child two years old, who had received an injury to the right eye by falling upon the point of a paring knife. The blade had entered just below the supraorbital ridge, near the inner canthus, the wound extending outward for three-quarters of an inch. The child when first seen was suffering from shock but not from hemmorrhage. The tension of the eye ball was normal and it showed no evidence of injury. No foreign body could be seen but on probing the gaping linear wound, a metallic body was felt; the object was grasped with forceps and withdrawn, proving to be part of the paring knife blade, two and a half inches long and five-eighths of an inch wide at the base where it was broken off. The blade when removed was bright and clean; it probably passed through the ethmoid cells although there was no bleeding from the nose. The baby has now recovered, the fundus is normal and there is no impairment of any of the ocular movements. In view of the large size of the foreign body the fact that greater injury did not result is truly remarkable.

Anomalous Vitreous Vessel.

Dr Krebs presented a boy of 16 in whose left eye there was a twisted vascular loop that arose from near the center of the optic disc and extended forward into the vitreous about three millimeters; it was of the color of the veins of the fundus and did not pulsate. The eye was otherwise normal.

Chronic Iridocyclitis.

Dr. Weisser reported a case of old chronic iridocyclitis in a patient with syphilis and tuberculosis. A Wassermann test was positive and there was a clear history of syphilis. There being no contraindication, Salvarsan was given intravenously and three days later a severe acute iritis set in which gradually disappeared after one month's treatment with mercury.

Staphyloma of Cornea.

Dr. Markel reported the results of an operation for staphyloma of the cornea in a girl of 14. In June she had a severe pneumococcic muco-purulent conjunctivitis, followed by a rapidly spreading ulcer of the cornea. The ulcer ended in perforation of the cornea with prolapse of the iris. Healing was then prompt but a staphyloma appeared which, however, flattened out after the use of a compression bandage. In November, the staphyloma recurred and became quite large, being about 7 mm. in diameter. Compression bandage and even sclero-corneal trephining failed to reduce the bulging. In December the staphyloma was excised, an elliptical section of the cornea and the adherent atrophic iris being removed. The wound edges were united by three sutures the conjunctiva dissected up from the entire limbus and drawn over the cornea by a purse string suture. The sutures were removed ten days later. The final result is good, the cornea being flat and the eye quiet. The patient was exhibited.

Exophoria of Doubtful Origin.

Dr. Weisser reported a case of muscle disturbance that was of interest from the standpoint of its supposed etiology. A woman of 40, who recently became irregular in her menstrual periods (thought to be beginning menopause), developed a divergent strabismus which varied greatly in degree and was accompanied by various annoying symptoms such as diplopia, spasm of accommodation, photophobia, etc. Motion was good in all directions and the divergence could be overcome with effort. Under cover, there was a divergence of 18°. Treatment consisting of complete rest, cold compresses to the eyes and increasing doses of nux vomica is resulting in marked improvement.

Chemical Burn of Eye from Indelible Pencil.

Dr. Stieren reported the case of a twenty-five year old male who while writing with an indelible pencil, had a piece break off and enter the left eye. A physician removed the piece of crayon at once and cleansed the eye, the conjunctiva of which had been stained blue. The eye became very painful that night and there was profuse lacrymation. When seen by Dr. Stieren the next morning, there was a denuded area on the cornea extending from the lower border of the pupil downward to about 4 mm. beyond the limbus into the conjunctiva; the epithelium and the superficial corneal stroma were involved. There was no longer any staining of the cornea or conjunctiva but the eye was acutely sensitive, with a strongly contracted pupil and marked photophobia. Dr. Geo. S. Crompton reported a series of these cases before the Section on Ophthalmology of the College of Physicians of Philadelphia in February, 1913, and reviewed the work done experimentally with anilines upon the tissues of the eye and reached the conclusion that only basic aniline colors are injurious. Crystal violet, Victoria blue and Malachite green produced panophthalmitis when dusted into the conjunctival sac of rabbits. The pencil used by Dr. Stieren's patient is known as Violet Copying, made by E. Faber and no doubt contained crystal violet. In treating eye injuries from aniline pencils, efforts should be made to remove the particles as soon and as thoroughly as possible, even though they be deeply imbedded in the ocular or orbital tissues, as the vitality of the corneal epithelium is quickly diminished by the outflow of dye. Complete exfoliation of the epithelium results if the amount of aniline color be excessive or its presence long continued and corneal opacities with serious loss of vision may result. The disfigurement from the staining of the tissues is unimportant as it disappears rapidly. Vogt recommends prompt irrigation with a 5% solution of tannin instead of the usual collyria. He states that the use of sodium chlorid, boric acid or sodium bicarbonate, the very solutions most likely to be at hand, only intensify the caustic action of the dye and that they do more harm than if nothing at all is used.

Adolph Krebs,
Secretary.

TRANSACTIONS OF THE PHILADELPHIA POLYCLINIC SOCIETY.

January 14, 1915.

"The Symptomatology of Acute and Chronic Retrobulbar Neuritis."—Dr. William Zentmayer.

As Dr. Reber has said, retrobulbar neuritis may best be considered under two heads, acute and chronic. It is, however, not accurate to consider the term "chronic retrobulbar neuritis" as synonymous with "toxic amblyopia," as it is now well understood that certain of the agents which produce amblyopia, *e. g.*, methyl alcohol and quinine, exert their toxic influence upon the ganglion cells of the retina, such changes as may be present in the optic nerve probably being secondary. Therefore we will omit a consideration of these and other drugs which act in this manner.

Dr. Zentmayer detailed the symptoms of the two varieties and emphasized the fact that the phenomena of the acute did not present the constancy of the chronic type. The differential etiological diagnosis presented many difficulties. In the acute type the existence of the enlarged blind spot together with a central scotoma would indicate a sinusitis. A sudden marked loss of vision with an early sign of either obstruction to the central retinal circulation or beginning papilloedema would be suggestive of an intravaginal hemorrhage. A similar onset with associated papillitis would indicate an orbital affection. Involvement of one of the ocular muscles with considerable retrobulbar pain would point to periostitis. These points concern only the ocular symptoms. The diagnosis is aided by the history, the results of laboratory tests and roentgenology.

In the chronic retrobulbar neuritis if the scotoma is absolute and transient and there is a marked discrepancy between the field findings and the ophthalmoscopic changes, disseminated sclerosis would be indicated. Uhthoff holds that a differential diagnosis between tobacco and ethyl alcohol amblyopia cannot be made from the ocular symptoms. However, in the presence of retinal hemorrhages, which occur in some cases and other signs of retinal angiosclerosis, it is probable that in a mixed toxemia alcohol has been the most important factor in the case.

The question of the relation of arteriosclerosis to tobacco-alcohol amblyopia is of considerable interest. Among those who have especially called attention to it is Scalinci. The age at which amblyopia due to these agents occurs, that there is often a marked difference in the degree of involvement in the two eyes, that blood pressure is often much increased, that there are evidences of widespread arteriosclerosis, are points brought forward by this author. Kruger has found evidences of retinal sclerosis involving principally the macular twigs in most cases. To these findings I would add retinal hemorrhages, which I have found in at least three cases.

As to the explanation of the phenomena of retrobulbar neuritis, several theories are advanced to explain the nyctalopia, the most plausible being that the production of the visual substance can more readily keep pace with its expenditure in subdued than in bright light. The biologic axiom of Erdinger "that a high degree of functional activity involves an increased morbidity" has been suggested as the cause of the susceptibility of the papillomacular bundle to toxic agents. A second theory advanced is the poorer supply of blood to the macular region and a third reason given is that the cones are connected with the polar cells by only one fibre, whereas the rods have several.

It is interesting to note that Ronne's anatomic findings in several cases of tobacco-alcohol amblyopia indicate that the process is a degeneration of the papillomacular bundle and not an interstitial infection.

The Hereditary Form of Retrobulbar Neuritis (or Leber's Disease).—Dr. William Campbell Posey.

Dr. Posey said that the hereditary optic neuritis had first been described by Leber in 1871, whence the name, often applied, of Leber's Disease. The disease manifests itself as a retrobulbar neuritis, usually between the 18th and 23rd years, but as early as the fifth and late as the forty-third year. Both eyes are affected and loss of sight, which is usually rapid, is dependent upon a central scotoma, the periphery of the field being but rarely involved. While complete blindness has supervened in some cases, the retention of fairly useful vision is general. In the early stages, there are signs of a slight neuritis, later atrophy. Cause of disease is unknown. Dr. Posey is inclined to support Berger's view of an anomaly in the development of the sphenoid, but said the proof of this hypothesis was lacking. In the cases of the disease which he had seen he doubted the neuropathic element which has been claimed by others as a constant factor in these cases.

Dr. Posey referred to two families in which he had studied the disease. The first of these, which was reported by him in 1898, consisted of three males, father, son and maternal uncle. In all three of these, the disease manifested itself at 25 years of age, the resultant vision in all equalling about 5/40. Although all three were addicted to tobacco, it would appear that none indulged in it to a degree sufficient, without other factors, to inaugurate the disease. Dr. Posey asserted that the possible influence of tobacco should be always considered in the etiology of a hereditary optic nerve atrophy, for while in all likelihood, there are other predisposing agents, it is probable that tobacco may be an exciting cause which originates the disease in many instances.

The second family he studied consisted of the son, aged 16, and the father, aged 51. The disease appeared in both in very early childhood. No other member of the family was affected. Resultant vision in the father was about 5/40 in each eye, in the son 5/35. The father showed characteristic central scotoma. Those in the son were para-central.

Treatment of Retrobulbar Neuritis—Dr. T. B. Holloway.

In alluding to the treatment of this affection Dr. Holloway stated that he thought there were no ocular affections where the symptoms might be more alarming to the patient than in the acute form of this disease. Owing to the fact that the etiologic factor is often obscure patients could be better treated if they were placed in an institution where they could be promptly and thoroughly investigated. Owing to the conspicuous role that has been assigned to the accessory sinuses in the production of eye disease, one would naturally insist upon a thorough examination of these structures, and in the event of positive findings prompt and efficient treatment of the same. The same would apply to investigations of the mouth and pharynx. In fact, eliminative treatment in this disease is essential whether it is brought about by means of surgical intervention or stimulation of various physiologic functions, such as diaphoresis. For the latter Dr. Holloway prefers the cabinet bath, although pilocarpin or the older method of blankets and hot water bottles might be resorted to. Mercury and iodides would of course be exhibited in those cases where these remedies were especially indicated, but even where such was not the case, innunctions of mercury could well be used, because it was so frequently of service in ocular conditions that were not of specific origin. Sodium salicylate has also proven of service, as has local irritation sometimes applied behind the ear.

As to the chronic affection, the first thing that would suggest itself would be the immediate removal of the patient from contact with the toxic substance. As far as alcohol and tobacco were concerned, the use of these should be completely stopped and the patient should be cautioned that one cigar or one drink a day might be sufficient to perpetuate the disease. Owing to the frequency with which the use of these drugs is accompanied by disturbances elsewhere in the body, any coexisting affections must receive attention. In the chronic type sweats would prove of the greatest service. For its tonic effect strychnia, either by the mouth or hypodermically, beginning with 1/30 of a grain, should be administered.

Dr. Holloway has never had occasion to resort to brucine, neither has he had any experience with thiosinamine. He had used this latter drug some thirteen years ago for conditions other than those existing in the eye, and had never seen the slightest benefit from its use. He has had but little experience with the use of electricity in the treatment of nerve atrophies. In a recent case where the high frequency current had been used for a rapidly progressing atrophy occurring in tabes, its use had been disastrous.

W. W. Watson,
Secretary.

COLORADO OPHTHALMOLOGICAL SOCIETY.

EDWARD JACKSON, M. D., PRESIDING.

FEBRUARY 20, 1915.

Penetrating Injuries to the Eyes—Result of Explosion.

Dr. E. T. Boyd presented this case. Man, aged 34, miner. December 10th, 1914, picked into a missed hole. Dr. Strong of Leadville saw the case about one hour after injury. At this time, in addition to a great number of foreign bodies in the cornea of each eye there was perforation of the sclera of the right eye between the insertions of the internal and inferior recti muscles. The external wound in the conjunctiva was slightly obtuse with its apex about five mm. from the sclerocorneal junction, wound extending vertically for 10 mm. Wound in sclera was 5 or 6 mm. in extent with a bead of vitreous presenting, this was snipped off.

In the left eye there were numerous corneal perforations and a splinter of wood in the cornea presenting in the anterior chamber.

Present condition. Right eye: Conjunctival scar showing extent of wound. Pupil oval horizontally, 3 mm. greater in diameter than the left, reactions normal. Cornea scarred with some foreign bodies imbedded and covered with epithelium. Disc blurred. Fundus changes in the way of exudates corresponding to the scleral wound. Vision, 20/100 plus 1.

Left eye: Corneal scars with some foreign bodies remaining. On the anterior surface of the iris there are four pieces of rock at about 6 of the clock dial, 1 at 8, 1 at 11 and some particles at 3 and 4; all these are small and none of them more than ½ mm. in diameter. In the lens there are five small pieces of rock, three on the capsule and two located more deeply. No fundus changes. No foreign bodies demonstrable in the vitreous of either eye by means of the ophthalmoscope. Vision 20/100.

DISCUSSION. Dr. G. F. Libby said that he had had a similar case in which numerous foreign bodies remained embedded in the cornea; with the cornea smooth, no staining and no indication of irritation about the eye he thought it best to allow them to remain.

Dr. J. A. Patterson would like to know the probable prognosis in this case and said that he thought that such cases went to the bad.

Upon Dr. C. E. Walker's statement that the superficial foreign bodies should be allowed to remain. Dr. Patterson replied that he referred to the deeper ones. those within the eye doing damage.

Dr. Edward Jackson spoke of a case with fully fifty foreign bodies in the cornea and some in the lens in which the lens had remained clear for a long period of time. Thought possibly that in this case the left lens might become opaque later. but said that pieces of stone are far less liable to cause trouble than other substances.

Dr. W. F. Matson referred to the frequency with which coal miners would get foreign bodies embedded and cited a case where a piece of lime rock had penetrated the cornea and rested upon the iris and had become encysted: subsequently, iritis developed and the doctor had removed the foreign body with a piece of iris.

Dr. Jackson said that it might be that there was a foreign body in the fundus of the right eye.

Dr. Patterson thought it too early for this man to think of final settlement on account of his injury.

Dr. Boyd in closing, said that radiograms had been made but that he had not heard from the radiographer. Dr. Jackson remarked that if a foreign body were present in the right eye that it was probably too small for the radiogram to show it. Dr. Boyd continuing: he did not believe that there was a foreign body in the right eye but believed the appearance of the fundus to be due to exudate the result of the penetrating trauma. He was of the opinion that the left lens would remain clear and that the man would be perfectly safe in making settlement with the insurance company at this time. The foreign bodies in the cornea should not be disturbed at this time, but sooner or later some would have to be removed as they had a tendency to work through the epithelial covering and cause trouble.

Complete Atrophy of the Optic Nerve Coincident with Abscess of Lachrymal Sac.

Dr. Boyd: Mrs. M., age 35, the woman presented here tonight, was referred to me February 11th, for examination and certificate with reference to the condition of the right eye which she claimed was blind.

Being suspicious of all cases that hope to derive pecuniary benefit from loss of vision of one eye, I examined her very carefully; using diplopia test—strong plus lens over admittedly good eye—red and green letters on glass, with first red and then green lens over left eye—all of which showed the right eye to be blind. The pupils are of equal size and associated movements normal but there is no pupillary reflex to light thrown upon any portion of the retina of the right eye.

The ophthalmoscope reveals complete atrophy of the right optic nerve. This woman gives the following history: Married, seven living children, two died at birth and she has had two miscarriages. Five years ago had abscess of the right lachrymal sac and again two years later. Last August she again had abscess of the right lachrymal sac; the whole region in and about the eye being enormously swollen for about one week; the abscess then ruptured, swelling gradually subsided, and as soon as she was able to open the eye she discovered that she was unable to see with it. She is positively certain that before this attack she had not noticed diminished or impaired vision of the eye.

Save that above mentioned the woman has never been ill a day except during her numerous confinements. There is no specific history. Both nasal ducts are more or less obstructed with dacryocystitis on the right side.

It is very unusual for retrobulbar neuritis to be coincident with or to arise from abscess of the lachrymal sac, and in this case the inflammation must have been very severe and extensive, amounting to orbital cellulitis.

It was not necessary to syringe the right sac to demonstrate the presence of pus and she being averse to instrumentation the left was not explored. Taking into consideration the condition of the right eye and its cause, together with the obstruction now present on the left side, I believe that it would be good practice to remove sacs, or do the equivalent, obliterate them both by means of trichloracetic acid after the method of Gifford.

DISCUSSION. Dr. W. H. Crisp was skeptical with regards to the inflammation being the cause of the atrophy.

Dr. W. C. Bane had never seen optic atrophy from such cause. The doctor spoke of the peculiar appearance of the disc wherein the vessels at the bottom of the cup were flattened and devoid of color.

(Continued.)

NEWS AND NOTES.

Personals and items of interest should be sent to Dr. Emory Hill, 122 South Michigan avenue, Chicago, Ill.

As these columns go to press on the 15th of the month previous to publication, contributors will kindly send in their items before that date.

Dr. Frederick Vreeland of Chicago was married April 10 to Mary Burton Guthrie of Indianapolis, Ind.

Dr. Clarence P. Franklin has been appointed ophthalmologist to the Stetson Hospital, Philadelphia.

The New York Ophthalmic Institute has received a bequest of $5,000 by the will of the late William Washington Cole.

Dr. Harold P. Goldberger has been appointed ophthalmologist to the Episcopal Hospital, Philadelphia, vice Dr. John L. Broomly, deceased.

Drs. Walter R. Parker and George M. Waldeck of Detroit announce the removal of their offices to the David Whitney building in that city.

Dr. J. Louis Borsch, Jr., in charge of the eye department of the Military Hospital in Paris, has received the thanks of the Surgeon General for his work among the French wounded.

The following deaths of ophthalmologists are announced: Dr. Joshua S. Blanchard of Kearney, Neb.; Dr. R. Sydney Cauthen of Charlotte, N. C.; Dr. John C. Haskell of Charleston, S. C.; Dr. A. Birnbacher, professor of ophthalmology in the University of Graz, Germany.

A report from New York City states that an alien has been deported after conviction for causing the death of three men and the blindness of two others through the use of a preparation made of wood alcohol. During the past year six deaths and five cases of blindness from this cause have occurred in New York City alone.

Professor Friedrich Loeffler of Berlin is dead at the age of 63. The intimate association of the name of Loeffler with the development of the science of bacteriology, especially in connection with the name of Klebs, at one time of Chicago, makes the death of this great scientist of interest to American ophthalmology.

The State Board of Health of Illinois is supplying silver nitrate solution for prophylaxis against ophthalmia neonatorum to all who are authorized by law to attend upon births. It is stipulated that the name and address of each person receiving the solution be given and that the required birth certificate be filed in each case.

The ninth annual convention of the Illuminating Engineering Society will be held at the New Willard Hotel, Washington, D. C., September 20-23 inclusive. Mr. E. S. Marlow, of the Potomac Electric Power Company, Washington, D. C., is chairman of the convention committee. The schedule of sessions, papers, etc., will be announced later.

At a recent meeting of the ophthalmic section of the Royal Society of Medicine of London, Mr. A. B. Cridland called attention to a case of "glass workers' cataract" in an iron "puddler." Referring to the several occupations which subject the eyes to intense heat and glare, Mr. Cridland suggested "ray cataract" as a comprehensive term covering this type of cases. Mr. Priestley Smith proposed "furnace workers' cataract" as sufficiently inclusive, since furnace work is common to the various occupations concerned.

NEW BOOKS.

An Introduction to the Study of Colour Vision, by J. Herbert Parsons, D. Sc., F. R. C. S., Ophthalmic Surgeon, University College Hospital; Surgeon, Royal London (Moorfields) Ophthalmic Hospital. Cloth, 308 pages. Price $3.75 net. Cambridge: at the University Press. New York: G. P. Putnam's Sons, 1915.

Armour's
LABORATORY
Products

Our facilities for manufacturing the organo-therapeutic agents are unequaled

Armour's

Pineal Substance
—Powder
Tablets—1-20 gr.

Parathyroids
—Powder
Tablets—1-20 gr.

Pituitary Liquid
—(Physiologically Standardized)
1-c. c. ampoules

Corpus Luteum
—Powder
Capsules—5 gr.
Tablets—2 gr.

Duodenin

(Trade Mark)

(Secretin plus enterokinase)

RECOMMENDED in the treatment of intestinal disorders, especially those due to excessive proteid diet and malassimilation of proteins, on the theory that the hormones, prosecretin and enterokinase stimulate the glands of digestion and activate their secretions. Duodenin is supplied in 1-grain tablets, bottles of 100.

Literature to Medical Men on Request

ARMOUR AND COMPANY
Chicago

CHICAGO EYE CLINICS.

Hour.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
9 A.M.	Richard S. Pattillo (P.-G.) G. W. Mahoney (Poli.) R. B. Stephenson (P.-G.) Carl Wagner (E.E.N.T.)	*Geo. F. Suker (P.-G.) C. H. Francis (Poli.) A. Duncan (P.-G.) A. G. Wippern (E.E.N.T.)	W. F. Coleman (P.-G.) S. M. Hager (Poli.) H. N. Lyon (P.-G.) Carl Wagner (E.E.N.T.)	G. W. Mahoney (Poli.) Rich'd S. Pattillo (P.-G.) R. B. Stephenson (P.-G.) A. G. Wippern (E.E.N.T.)	C. H. Francis (Poli.) R. B. Stephenson (P.-G.) J. A. Cavanaugh (E. E. N. T.)	S. M. Hager (Poli.) C. W. Hawley (P.-G.) H. J. Morlan (P.-G.) A. G. Wippern (E.E.N.T.)
10 A.M.	Brown Pusey (N.W.U.) Geo. T. Jordan (N.W.U.) Robert Blue (N.W.U.) Every day, 10-12 A. M. Harry Gradle (E.E.N.T.)	J. R. Hoffman (E.E.N.T.)	Harry Gradle (E.E.N.T.)	J. R. Hoffman (E.E.N.T.)	Harry Gradle (E.E.N.T.)	J. R. Hoffman (E.E.N.T.)
1 P.M.	M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) Emily Selby (Inf.) *H. W. Woodruff (Inf.) *Oscar Dodd (Inf.) C. A. Leenheer (Inf.) D. W. Eiss (Inf.) E. R. Cressley (Inf.) C. C. Clement (Inf.) E. V. L. Brown (County) and Geo. F. Suker (County) Daily, 2:30 P. M. W. A. Fisher (E.E.N.T.)	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) E. K. Findlay (Inf.) Wm. E. Gamble (Inf.) J. B. Loring (Inf.) S. L. McCreight (C.C.S.) Robt. Von der Heydt (Inf.) L. G. Hoffmann (Inf.) A. P. Hunneman (Inf.) M. Goldenberg (Inf.) Francis Lane (Inf.) H. Walker (Inf.) W. A. Fisher (E.E.N.T.)	M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) Emily Selby (Inf.) *H. W. Woodruff (Inf. *Oscar Dodd (Inf.) C. A. Leenheer (Inf.) D. W. Eiss (Inf.) E. R. Cressley (Inf.) C. C. Clement (Inf.) Oliver Tydings (E. E. N. T.)	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) *Frank Allport (St. Luke's) *Frank Brawley (St. Luke's) E. K. Findlay (Inf.) Wm. E. Gamble (Inf.) *Paul Guilford (St. Luke's) *Casey Wood (St. Luke's) *T. A. Woodruff (St. Luke's) J. B. Loring, (Inf.) S. L. McCreigbt (C.C.S.) Robt. Von der Heydt (Inf.) L. G. Hoffman (Inf.) A. P. Hunneman (Inf.) M. Goldenberg (Inf.) Francis Lane (Inf.) H. Walker (Inf.) W. A. Fisher (E.E.N.T.)	M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) Emily Selby (Inf.) *Oscar Dodd (Inf.) C. A. Leenheer (Inf.) D. W. Eiss (Inf.) E. R. Cressley (Inf.) C. C. Clement (Inf.) H. W. Woodruff (Inf.) W. A. Fisher (E.E.N.T.)	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) E. K. Findlay (Inf.) Wm. E. Gamble (Inf.) J. B. Loring (Inf.) S. L. McCreight (C.C.S.) Robt. Von der Heydt (Inf.) L. G. Hoffman (Inf.) A. P. Hunneman (Inf.) M. Goldenberg (Inf.) Francis Lane (Inf.) H. Walker (Inf.) Oliver Tydings (E. E. N. T.)
3 P.M.	*Wm. E. Gamble (U. of I.) Wm. H. Wilder (Rush) H. S. Gradle Daily 3-5 (E. M. D.)	R. J. Tivnen (M. H.)	W. Allen Barr (C.C.S.) *Wm. E. Gamble (U. of I.)	Wm. H. Wilder (Rush) R. J. Tivnen (M. H.)	W. Allen Barr (C.C.S.)	Geo. F. Suker (P. G.) 2-5 H. Cuthbertson A. Duncan
4 P.M.	W. F. Coleman (P.-G.) H. N. Lyon (P.-G.) 2-5	C. W. Hawley (P.-G.) 2-5 J. F. Campbell (P.-G.) H. J. Morlan (P.-G.)	J. B. Loring (U. of I.) E. K. Findlay (U. of I.) G. F. Suker (P.-G.) 2-5 H. Cuthbertson (P.-G.)	C. W. Hawley (P.-G.) J. F. Campbell (P.-G.) H. J. Morlan (P.-G.)	W. F. Coleman (P.-G.) 2-5 H. N. Lyon (P.-G.)	

*Special operative eye clinic.

ABBREVIATIONS:

C. C. S.: Chicago Clinical School, 1844 W. Harrison Street.

E. M. D.: Emanuel Mandel Dispensary, 1012 Maxwell St.

County: Cook County Hospital, W. Harrison and Honore Streets.

Inf.: Illinois Charitable Eye and Ear Infirmary, Peoria and Adams Streets.

M. H.: Mercy Hospital.

Poli.: Chicago Policlinic and Hospital, 221 W. Chicago Avenue.

P.-G.: Post-Graduate Medical School of Chicago, 2400 Dearborn Street.

N. W. U.: Northwestern University, 2431 Dearborn Street.

Rush: Rush Medical College, W. Harrison and Wood Streets.

St. Luke's: St. Luke's Hospital, 1416 Indiana Avenue.

U. of I.: College of Medicine, University of Illinois, Congress and Lincoln Streets.

THE
OPHTHALMIC RECORD
A MONTHLY REVIEW OF THE PROGRESS
OF OPHTHALMOLOGY

Vol. XXIV CHICAGO, JUNE, 1915 No. 6, New Series

ORIGINAL ARTICLES

VERTEX-REFRACTION IN ITS TRUE ASPECT.

BY
CHARLES F. PRENTICE, M. E.
NEW YORK.

The need for a fixed point of orientation from which to measure the focal length of a lens of any form placed before the eye was first recognized by Dr. Moritz von Rohr, physicist, of the firm of Carl Zeiss, Jena, Germany, who suggested that it shall be the pole or vertex of the lens-surface facing the cornea; this being in precise agreement with the measurement of prisms suggested by the writer in 1890. In other words, the reciprocal of the distance between the vertex of this surface and the true focus of the lens shall represent its power or so-called vertex-refraction, designated by the symbol Dv. In fact, through such means only is it possible to accurately substitute a deeply curved lens for one of plano or equibispheric form, the increasing popularity of the former having encouraged Dr. von Rohr's investigations with this purpose in view.

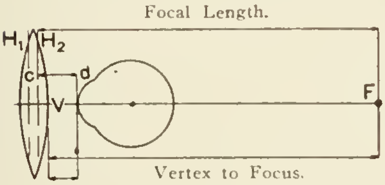


Fig. 1.

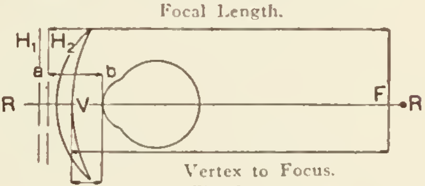


Fig. 2.

In the accompanying figures, 1 and 2, a biconvex lens and a meniscus of equal focal lengths are placed at the same interpolar distance from the eye, but, owing to the second principal plane, H_2, of the meniscus being farther (ab) from the cornea than that (cd) of the biconvex lens, the focal point, F, of the meniscus is correspondingly nearer than the *punctum remotum*, R, of the eye, which demonstrates that the meniscus will require to have a greater focal length, if its focus is to coincide with the ocular far point. Otherwise, as shown in the diagrams, the meniscus of the same focal length over corrects the hyperopia.

This clearly shows that lenses of the same refractive power are not interchangeable as ophthalmic corrections when they are of materially different forms. In fact, this is especially true when the power exceeds 3.5 dioptries.

Since the positions of the principal points, with respect to the lens itself, are dependent upon both the form and the thickness of the lens, it follows that its focal length is dependent upon two variables unknown to and neglected by the practitioner who measures ocular refraction.

Up to within a comparatively short time the refractive power of the lens and its distance from the eye have constituted the only data thought to be of moment in such practice, and which, indeed, is still true, provided the focal length of the lens is measured from the vertex of the lens proximate to the eye, instead of from the ever shifting principal points. In other words, when the vertex-refraction is substituted for the refractive power, the form and thickness may still be practically ignored, so long as means are provided to measure the vertex-refraction and the distance between the pole of the lens and the cornea.

By vertex-refraction is meant the reciprocal of the distance between the vertex of the lens and its focus, this distance for a biconvex (or biconcave) lens, being about 1/3 of the lens-thickness shorter (or longer) than the true focal length; that is to say, the vertex-refraction is correspondingly greater for the convex lens, Fig. 1, than its refractive power. But, as the thickness of ophthalmic lenses below 7 D. is a negligible dimension, there is practically not any difference between the refractive power and the vertex-refraction, so that the latter's practical utility is really confined to biconvex lenses of greater power than 7 dioptries and to the thin menisci and contramenisci above 3.5 dioptries.

It is only above these powers, respectively, that the displaced principal points produce a material difference between vertex-refraction and refractive power.

The following tabulation, determined through the subscribed formulae, sufficiently shows to what extent a difference in the thickness of bispheric lenses affects these values.

Comparative Values of Refracting Power and Vertex-Refraction in Strong Lenses.

	Ref'g Power in Dioptries.	Vertex-Ref'n in Dioptries.		Neg'ble Differences in Vertex-Ref'n.
1. Equiconcave Lens, 10 D. surfaces, 0.6 mm. thick..	—20.04	—19.96	No thickness, —20 D.	0.04 diop.
2. Equiconvex Lens, 10 D. surfaces, 7.8 mm. thick..	+19.48	+20.55	Don't neutralize—20 D.	
3. Biconvex Lens, unequal surfaces, 7.8 mm. thick..	+18.98	+19.96	from 9.47 D. surface	0.04 diop.
whose surfaces are indicated in colmn 3......	+18.98	+20.02	from 10 D. surface	0.02 diop.

The surfaces of the lens, 3, have been thus chosen in order that its refractive power, +18.98, shall neutralize with —20.04 when the 10 D. surfaces of both lenses are in contact. The vertex-refraction of the lenses, 1 and 3, whose refractive powers neutralize with 20.04, are both practically 20 dioptries in vertex-refraction, since hundredths of a dioptry in the last column are negligible values.

Here it is shown that increased thickness of the convex lenses, while reducing the refractive powers, correspondingly increases their vertex refractions. The reverse is true of the concave lens. Incidentally, when a meniscus exceeds 4.25D. it is thicker than a biconvex lens of the same power, but if it is a Punktal lens it is proportionately even still thicker among all powers. This lens will be described in a subsequent paper.

When the thickness of a lens exceeds 0.001 of the focal length, it is no longer permissible to compute its power by adding the refractive powers of its surfaces, so that it becomes necessary to incorporate its thickness in the formula:

$$D = D_1 + D_2 - D_1 D_2 \frac{t}{n}, \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{I.}$$

in which D is the dioptral power of the lens, D_1 and D_2, the powers of its surfaces, t, the thickness, and n, the refractive index of the glass.

The vertex-refraction (D_V) is obtained through the equation:

$$D_V = D \times \frac{1}{1 - D_1 \frac{t}{n}} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{II.}$$

when the surface corresponding to D_1 is proximate to the eye. In case the other side of the lens is presented to the eye, D_2 is therein to be substituted for D_1.

Through these formulae it may be easily shown that the thickness and the distance between two or more superposed lenses have considerable influence upon the refractive power and the vertex-refraction, so that it is also inaccurate to ignore the distance between lenses in the trial-frame as is commonly done, especially if the lenses are of appreciable power. In fact, it is absolutely necessary that the prescribed ophthalmic lens shall have the same vertex-refraction as the lenses combined in the trial-frame. As the disclosures which may be made through these formulae are at present of special interest, the first one is here applied to determine the refraction of a spherically curved medium, Fig. 3, 8.4 mm. thick, having a concave surface, D_2, corresponding to 10 dioptries of refraction. The refractive index of the glass is 1.507.

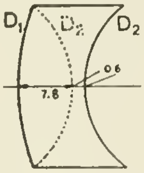


Fig. 3.

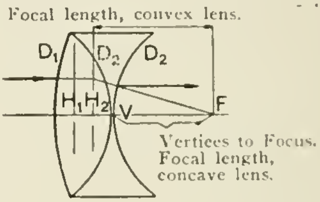


Fig. 4.

Now, let it be desired to know what curvature shall be given to the surface, D_1, in order that the refractive power of this medium shall be nil. In this instance,

$D=0$, $D_2=-10$, and $\frac{t}{n}=\frac{0.0084}{1.507}=0.005573$ meters, wherefore,

$$0 = D_1 - 10 + D_1 \times 0.005573.$$

$$\therefore D = 9.472,$$

the refraction of the first surface of the medium, and which, being less than $D_2 = 10$, demonstrates that the surfaces are not parallel, but actually bound a *contrameniscus without power,* its thickness being 8.4 mm. In order to make this apparent, the curvatures of D_1 and D_2 have been drawn disproportionate to each other. Furthermore, it is quite evident that this absence of refractive power will not be affected if, for convenience of further illustration, a spheric surface of 10 dioptries, corresponding to the dotted line in Fig. 3, is interpolated so as to virtually constitute two contiguous lenses of the thicknesses, 7.8 mm. and 0.6 mm., respectively. The power, D, of the convex lens thus constituted, when freed in the air, is therefore,

$D = D_1 + D_2 - D_1 D_2 \frac{t}{n}$, in which case $\frac{t}{n} = \frac{0.0078}{1.507} = 0.0051758.$

$$D = 9.472 + 10 - 94.72 \times 0.0051758.$$

$$= 19.472 - 0.4902.$$

$$\therefore D = 18.982,$$

which is the refractive power of the convex lens. The power of the concave lens, 0.6 mm. thick, having 10-dioptry surfaces, is similarly obtained through giving the negative sign to the surfaces, D_1 and D_2, so that $-D = -20.04$ is the power which neutralizes $+18.982$, the power of the contiguous convex lens.

As the surfaces of this convex lens are of different powers, it is necessary, in determining its vertex refraction, to apply the formula, II, to each side of the lens, since it will depend upon which side of the lens is to be proximate to the eye. Hence, if the weaker side, $D_1 = 9.472$, is placed near the eye, and which would be the case with a lens of this form,

$$D_V = D.\frac{1}{1 - D_1 \frac{t}{n}}, \text{ and since } \frac{t}{n} = 0.0051758,$$

$$D_V = 18.982 \frac{1}{1 - 9.472 \times 0.0051758}$$

$$= \frac{18.982.}{0.9509.}$$

$$\therefore D_V = 19.962, \text{ or practically } 20\ D_V.$$

Similarly, if the stronger side of the convex lens is proximate to the eye, $D_2 = 10$ is substituted for D_1, so that the vertex-refraction is found to be

$$D_V = \frac{18.982.}{0.94824}$$

$$\therefore D_V = 20.02,$$

therefore, also practically 20 D_V., and which is the highest lens-power used in ophthalmic practice.

This conclusively proves that:

Two superposed contra-generic lenses of minimum thickness, whose dioptral powers effectually neutralize each other, have the same vertex-refraction, even though their refractive powers are actually and unavoidably different.

Conversely, two contra-generic lenses of least thickness and of the same vertex-refraction, whose surfaces are brought into absolute contact, neutralize each other's unequal refractive powers.

Surprising as this may prove to be, it also demonstrates that the vertex system does not defeat the advantages of the principle advocated by the author and adopted 20 years ago by all but one of the leading lens manufacturers in America, namely, that the stronger biconvex lenses shall be made weaker than standard biconcave lenses of least polar thickness, in order to extend neutralization to all equibispheric lenses, and whose vertex-refractions, for this very reason, are now found to be the same as the dioptral numbers they conventionally bear, and which may be readily verified through measurement by the vertex-dioptrometer; this being a more appropriate name than "vertex-measuring instrument," which certainly does not measure the vertex.

Quite apart from this demonstration, in which provision is actually made for a concave lens-thickness of 0.6 mm., it is self-evident that, if the concave lens, Fig. 4, is made infinitely thin and the contiguous lenses of different powers neutralize each other, their focal points must be in the same place, while their vertices likewise coincide. Therefore, the distances between the vertices and the focus are practically equal, so that the vertex-refraction is the same for each lens. It is, of course, to be understood that the aforesaid law applies only to ophthalmic lenses whose apertures are comparatively small. American lens manufacturers have in the past assumed quite different attitudes with respect to the numbering of their biconvex lenses ranging between 7 and 20 dioptries; one optical company having ignored in them the admissibility of neutralization, the other companies having jointly conceded and provided for it, so that the actual powers of such biconvex lenses have not been uniformly the same for all lenses bearing the same number. This discrepancy has for years been a source of misconception and inconvenience to most opticians, but, fortunately, will no longer exist after the dissenting optical company discovers that the vertex-refraction of paired contrageneric lenses in its own new trial-sets, regardless of power, are also actually of the refractive powers necessary to neutralize each other, and which the vertex-dioptrometer will likewise unquestionably sustantiate. For instance, it is well known that a + 20 D. biconvex lens of appreciable thickness can not be neutralized by — 20 D., even though each lens actually measures 20 D. upon the optical bench, or an equivalent instrument. See lens, 2, in the preceding tabulation. On the other hand, if the principle of neutralization, for a refractive index of 1.507, is made to apply to equibispheric lenses of such power, a standard biconcave lense (0.6 mm. thick) of — 20.04 D. will be neutralized by a + 18.98 D. biconvex lens (7.8 mm. thick), which, being conventionally numbered + 20 D., will now by the instrument actually measure + 19.96 D_V. and, therefore, practically + 20 D_V. Hence, the + 18.98 D. lens, which neutralizes the — 20.04 D. lens also has, within the negligible error of 4/100ths of a dioptry, the same vertex-refraction, 20 D_V. In short, the dioptral values of all lenses made by manufacturers who originally adopted the author's suggestion are at present actually the equivalents of vertex-refraction.

In fact, the trial-sets made by the American Optical Co. have for 20 years been numbered to signify either dioptries or vertex-refraction, though the latter was, of course, not to have been anticipated, since Dr. von Rohr has only recently and probably quite unconscientiously proven the wisdom of the author's original suggestion. Let it be well understood that, there is not any difference between dioptries and vertex-refraction when they are applied exclusively to biconvex and biconcave lenses of really *negligible thickness, or to convex lenses, regardless of power, that are effectually neutralized by concave lenses of least thickness,* and only in case they do not neutralize is there any discoverable difference in these values among *biconvex lenses* stronger than 7 D. Therefore, in any case where effectual neutralization is in doubt, the vertex-refraction is to be determined by means of the vertex-dioptrometer. In fact, this instrument may be relied upon to secure absolute precision with respect to the measurement and duplication of any lens or combination of lenses in the trial-frame, in terms of vertex-refraction. Moreover, this system of measurement supplies a long felt need in making it possible to more accurately substitute the menisci and contramenisci for lenses of the flatter types or their combinations, besides obviating recourse to neutralization among deeply curved lenses, and which never did apply to them with any reliable degree of accuracy.

Should these lenses eventually take the place of all other ophthalmic lenses, excepting those in the trial-set, then certainly will vertex-refraction, the vertex-dioptrometer and the instrument for measuring the distance between the poles of the cornea and trial-lens constitute absolutely indispensable accessories to ophthalmic practice. However, in the interim the progressive practitioner will recognize the desirability of having his trial-lenses rated in vertex-refraction, *provided they do not accurately neutralize each other throughout the entire range of* *their powers,* and of using a trial-frame in which the distance between the cells is reduced to a minimum, so as to secure the true vertex-refraction of superposed spheric and cylindric lenses when they are to be substituted by menisci or contra menisci. In order to avoid the influence of thickness it is now proposed to materially reduce the diameter of our trial-lenses, which are to be numbered in vertex-refraction and made flat on one side so as to minimize the extent of their separation in the trial-frame. With this change, the principle of neutralization will, of course, all the more readily apply among all powers of paired contra-generic trial-lenses whose curved surfaces may be effectually brought into contact.

The facts disclosed in this discussion justify the conclusion that, from a strictly practical point of view the vertex-system is a reliable monitor to insure the righteous performance of convex lenses, especially those which are stronger than 7 dioptries, and a subtle guide to the correct substitution of a deeply curved lens, either spheric or toric, for any lens or combination of lenses that may be mounted in the trial-frame at a definite distance from the eye. More can not be consistently claimed for it. While it is true that the vertex-system of measurement and the method of neutralization are equally inefficient with respect to disclosing the *true refracting power* of a strong convex lens, yet the present practice of neutralization should be perpetuated as an eminently convenient means of verifying the fact that:

When two contra-generic lenses, of any power and of minimum thickness, effectually neutralize each other, they are of the same vertex-refraction.

THE COLLOIDAL THEORY OF THE PATHOLOGY OF GLAUCOMA.*

BY

JOHN ALEXANDER McCAW, A. B., M. D., Oph. D. (Colo.)

The problem that we have set for ourselves is to test by experiment the colloidal theory of glaucoma as advanced by Martin Fischer. Fischer claims to have demonstrated that glaucoma is caused by chemical changes in the circulating fluids in the eye. These chemical changes increase the affinity of the tissues for water. The eye swells by absorbing the water brought into it by the circulating fluids. Glaucoma is therefore according to Fischer an oedema of the eye.

---

* Thesis for the degree Doctor of Ophthalmology, University of Colorado.

Variations in the amount of water held by cells and tissues occur in a great variety of animals and plants. Under a variety of circumstances single cells may be made to absorb enough water to burst. These are true oedemas. We shall see by reports of experiments that eyes immersed in dilute acids become as hard as stone and burst their sclerotic coats in six and seven hours.

The cause of the oedemas lies in the tissues. Fischer ligated the leg of a frog just above the knee so tightly as to shut off both arterial and venous flow. The animal was then placed in sufficient water to cover the legs. The ligated leg developed an intense oedema while the unligated leg remained normal. This result cannot be explained by any circulating fluids because there are none. It proved that circulating fluids, as blood and lymph, had nothing to do with the oedema. He ligated a frog's leg above the knee joint where it is free from musculature and put it into a dry bowl. The leg below the ligature gradually dried up and withered until only the bones were left. Also he ligated a frog's leg above the knee and then amputated it. The skin was pulled up over the end and tied tightly and put into a bowl containing water, the leg developed an intense oedema. These three experiments with frog's legs seem to establish the fact that pressure of circulating blood and lymph could not account for the great swelling.

Fischer seeks an explanation for the changes that take place in the tissues in oedema, in the affinity of colloids of the tissues for water. He discusses the properties of the colloids in their behavior towards water. Fifty years ago Graham recognized that different chemical substances differ in the rate with which they diffuse through solvents of different kinds. On the basis of this observation he made a distinction between those which diffuse only slowly and those which diffuse rapidly. The former, amorphous mostly he called colloids. The group that diffuse rapidly he called crystalloids, as cane sugar, salt, etc. Crystalloids make true solutions. Colloids do not, they remain suspended in the solvent.

Perrin distinguished between those colloids which in the solid state are rich in water and those which are poor. The former he called hydrophilic colloids and the latter hydrophobic colloids. Fischer states that when we recall that the hydrophilic colloids, as gelatin, fibrin and dextrin, starch, glue, vegetable fibre, albumens and gums are for the most part derived from biological sources, their importance to the living animal or vegetable must be suspected. Not only is the chief mass of the living organism built up of colloidal material but most of it belongs to the hydrophilic group.

Observations on the Swelling of Fibrin.

Ordinary blood fibrin was used in these experiments. After being thoroughly washed free from salts the fibrin was dried at a low temperature and pulverized in a mortar. When weighed amounts of this fibrin (0.25 gram) are introduced into definite volumes (25cc.) of various solutions contained in test tubes of the same diameter the fibrin swells to various heights. For our purpose we will refer to but two of the results. (a) Fibrin swells more in the solution of any acid than it does in distilled water, but when equinormal acids are compared the amount of swelling is greater in some acids than in others. Fibrin swells more in hydrochloric acid than in nitric acid, and more in nitric than in acetic acid. The amount that fibrin swells in any acid solution is dependent upon the concentration of the acid. (b) The addition of any salt to an acid solution decreases the amount that fibrin will swell in that solution. The higher the concentration of the added salt the less does the fibrin swell. If enough is added the effect of the acid may be entirely suppressed.

Observation on the behavior of gelatin in acid solutions and in acid solutions with added salts show that in the main the same results are obtained as are found for fibrin. The absorption of water by the eye ball is entirely analogous to the absorption of water by fibrin and by gelatin.

Observation on the Absorption of Water by Sheep's Eyes.

Glass bowls with covers were used. Each bowl contained 220cc. of the solutions. The acid solutions were made by adding 2, 4, 6, 8, 12, 14, 16cc. of one-tenth normal acids of hydrochloric, nitric and acetic acids to distilled water sufficient to make 220cc. of solution. Fresh sheep's eyes were used. All muscles and tags of fat were removed and the eyes were weighed in a Trommer Scale and put into the solutions and weighed every five to six hours for thirty hours. One eye was weighed and put into distilled water for purposes of comparison.

The eyes in hydrochloric, nitric and acetic acid solutions absorbed enormous amounts of water as indicated in the increase in their weight. Those eyes in hydrochloric and nitric acid solutions of the strength of 7/110 normal and 8/110 normal acid ruptured the sclerotic coats. The rupture was in the equator of the eyeball about ¼ inch back of the muscle insertions. They did not rupture around the region of the cornea.

It was also noticed that the acid solutions gave a steamy appearance to the cornea. This appearance increased with the concentration of the acids. The opacity of the cornea was greater in the nitric acid solutions than in those of hydrochloric or acetic acid. The vitreous extruded through the ruptured sclerotic had the appearance of cooked white of egg.

Hydrochloric Acid 2cc. of 1/10 normal with sufficient Distilled Water to make 220cc. of solution.

Hours in solution.	Grams.
0	16.8
5	16.8
10	17.3
16	17.3
22	17.6
30	17.8

Hydrochloric Acid 4cc. of 1/10 normal with sufficient Distilled Water to make 220cc. of solution.

Hours in solution.	Grams.
0	16.8
5	16.9
10	17.4
16	17.5
22	17.5
30	18.

Hydrochloric Acid 6cc. of 1/10 normal with sufficient Distilled Water to make 220cc. of solution.

Hours in solution.	Grams.
0	14.
5	17.4
10	19
16	19
22	19.7
30	18.3

Hydrochloric Acid 8cc. of 1/10 normal with sufficient Distilled Water to make 220cc. of solution.

Hours in solution.	Grams.
0	14.1
5	17.1
10	19.1
16	19.5
22	18.7
30	18

Hydrochloric Acid 12cc. of 1/10 normal with sufficient Distilled Water to make 220cc. of solution.

Hours in solution.	Grams.
0	15.1
5	20
10	21.9
16	23.1
22	22.3
30	21.9

Hydrochloric Acid 14cc. of 1/10 normal with sufficient Distilled Water to make 220cc. of solution.

Hours in solution.	Grams.
0	19.3
5	23.3
10	23.9
16	23.4
22	22.6
30	23

Hydrochloric Acid 16cc. of 1/10 normal with sufficient Distilled Water to make 220cc. of solution.

Hours in solution.	Grams.
0	13.5
5	18.3
10	19.1
16	17.4
22	17.4
30	17.4

Distilled Water.

Hours in solution.	Grams.
0	14
5	15.6
10	15.8
16	15.8
22	15.7
30	15.7

Nitric Acid 2cc. of 1/10 normal with sufficient Distilled Water to make 220cc. of solution.

Hours in solution.	Grams.
0	14.8
5	18
10	18.9
16	19
22	18.7
30	19

Nitric Acid 4cc. of 1/10 normal with sufficient Distilled Water to make 220cc. of solution.

Hours in solution.	Grams.
0	14.7
5	17
10	17.8
16	17.2
22	18.3
30	17.8

Nitric Acid 6cc. of 1/10 normal with sufficient Distilled Water to make 220cc. of solution.

Hours in solution.	Grams.
0	14.5
5	17.5
10	18.3
16	18.7
22	19
30	19.3

Nitric Acid 8cc. of 1/10 normal with sufficient Distilled Water to make 220cc. of solution.

Hours in solution.	Grams.
0	15.3
5	18.6
10	19.3
16	20.5
22	20.5
30	21.1

Nitric Acid 12cc. of 1/10 normal with sufficient Distilled Water to make 220cc. of solution.

Hours in solution.	Grams.
0	19.6
5	22.9

10	23.3
16	24.3
22	24.3
30	25

Nitric Acid 14cc. of 1/10 normal with sufficient Distilled Water to make 220cc. of solution.

Hours in solution.	Grams.
0	18.8
5	24.7
10	27.1
16	28.4
22	27.9
30	28.3

Nitric Acid 16cc. of 1/10 normal with sufficient Distilled Water to make 220cc. of solution.

Hours in solution.	Grams.
0	20.4
5	24
10	25.5
16	26
22	25.4
30	25.2

Acetic Acid 2cc. of 1/10 normal with sufficient Distilled Water to make 220cc. of solution.

Hours in solution.	Grams.
0	14.6
5	15.5
10	16.2
16	16.8
22	16.3
30	15.2

Acetic Acid 4cc. of 1/10 normal with sufficient Distilled Water to make 220cc. of solution.

Hours in solution.	Grams.
5	14.7
10	15.1
16	15.7
22	15.7
30	15.4

Acetic Acid 6cc. of 1/10 normal with sufficient Distilled Water to make 220cc. of solution.

Hours in solution.	Grams.
0	13.4
5	14.1
10	14.5
16	15
22	14.6
30	14.3

Acetic Acid 8cc. of 1/10 normal with sufficient Distilled Water to make 220cc. of solution.

Hours in solution.	Grams.
0	19
5	20
10	20.8
16	21.3
22	20.8
30	21

Acetic Acid 12cc. of 1/10 normal with sufficient Distilled Water to make 220cc. of solution.

Hours in solution.	Grams.
0	12.6
5	13.4
10	13.6
16	14.3
22	13.9
30	13.9

Acetic Acid 14cc. of 1/10 normal with sufficient Distilled Water to make 220cc. of solution.

Hours in solution.	Grams.
0	12.7
5	14.2
10	13.9
16	14.6
22	14.3
30	14.5

Acetic Acid 16cc. of 1/10 normal with sufficient Distilled Water to make 220cc. of solution.

Hours in solution.	Grams.
0	16
5	17.7
10	17.2
16	18
22	17.6
30	17.7

The experiments performed lead to the conclusion that the cause of the oedema lies in the tissues; but what changes do the tissues suffer in order to get into this pathological state? A state of oedema is induced whenever in the presence of an adequate supply of water the affinity of the colloids of the tissues for water is increased above the normal. The accumulation of acids within the tissues, brought either through their abnormal production or through the inadequate removal of such as are normally produced in the tissues, is chiefly responsible for this increase in the affinity of colloids for water. Though the possibility of explaining at least some of the increased affinity for water, through the production or accumulation of substances which affect the colloids in a way similar to acids, or through the conversion of colloids having but a little affinity for water into such as have a greater affinity for water must also be borne in mind.

1. An abnormal production or accumulation of acids or conditions predisposing thereto, exists in all states in which we encounter the development of oedema.

Fischer points out that we are prone to see states of oedema develop in conjunction with circulatory disturbances. We will have no difficulty in interpreting the variations in the severity of a local or general oedema, due to a circulatory disturbance if we say that every condition that makes for a state of lack of oxygen in the oedematous parts, be this through disturbances in the affected parts themselves, or in some distant organ as the heart, makes for an increase in the severity of the oedema. Is every state of lack of oxygen accompanied by an abnormal production or accumulation of acids? For as already stated this is what we need to know and do know from our previous experiment to be most potent in increasing the affinity of the tissue colloids for water.

To answer this question we will introduce the experimental findings of Trasaburo Araki. This author has shown that in lack of oxygen, no matter how produced, dogs, rabbits and frogs, excrete lactic acid in their urine in addition to various other abnormal substances. He found lactic acid in the urine of epileptics voided shortly after their seizures. E. Mendel found that the phosphoric acid content of the urine is increased immediately after epileptic seizures and in apoplexy. Hoppe-Seyler's analysis of various oedema fluids which he found to contain besides lactic acid, valerianic, succinic and butyric acids.

The lactic acid found in conditions associated with a lack of oxygen is produced in the tissues, enters the blood and is excreted by the kidneys. This has been proved by the experiments of Araki and those of Hermann Zillessen. Zillessen found that when the supply of oxygen to the liver is shut off for a number of hours through the ligation of the hepatic artery, an increased production of lactic acid occurs. If the ligature is removed and the first blood returning from this organ is analyzed it is found to be particularly rich in lactic acid. Any interference with the normal oxygen carrying power of the blood may therefore be expected to induce a state of lack of oxygen in the tissues. Hoppe-Seyler was able to obtain lactic acid from the urine in two severe cases of anaemia. Von Jaksch found that blood shows a distinctive diminished power of neutralizing acids in pernicious anaemia, leukaemia, and chlorosis. This decrease means an abnormal production of acids has occurred in the tissues.

Pathologically considered, glaucoma is a local oedema, or an oedema of a special organ. Clinically considered all the symptoms of this disease are referable to the increase of intraocular pressure induced by the large amount of water held by the eye.

Priestley Smith and other ophthalmologists have explained the increased tension by purely mechanical and nervous means. The blood pressure in the afferent vessels of the eye is raised, while the drainage of the eye is obstructed by the closure of the filtration angle of the anterior chamber, causing more fluid to enter the eye while there is less to leave it, thus raising the pressure. Priestley Smith after stating a number of predisposing and contributing causes of glaucoma, says we might reckon among the predisposing causes of glaucoma various morbid conditions of the system and probably certain latent morbid changes in the eye itself.

The experiments which we have performed and recorded show very clearly that an intense glaucoma can be induced without any circulation whatever. Also you may have an increase of pressure in the circulating fluids of the eye without any symptom of glaucoma. This leads us to the conclusion that the cause of glaucoma may well reside in the tissues of the eye and that it becomes glaucomatous not because there is more fluid pressed into it but because through changes in it, it absorbs more water. That the amount of such absorption is sufficient to explain the severest grades of glaucoma ever observed clinically is evidenced by the fact that through the addition of a little acid a sheep eye can be made to absorb enough water to rupture the sclerotic.

Our experiments further show that this increased absorption for water by the eye is dependent upon the colloids in the eye, for not only is the eye built up of a series of different colloids, but the same conditions that govern the absorption of water by fibrin, also governs the absorption of water by the eye. Also on the ground of these experiments we infer that the eye becomes glaucomatous through the chemical changes within the eye itself which increases the affinity of the ocular colloids for water so these are enabled to absorb water from any source available.

Just what the chemical changes in the eye are in clinical cases of glaucoma, no one is able to state definitely. We may infer that the cause of this oedema is the same in the essentials as that of the more general ones. In a large number of glaucoma cases circulatory disturbances in the eye which permit of an accumulation of carbon dioxide and the abnormal development of such acids as are a constant accompaniment of states of lack of oxygen, are unquestionably present. The best evidence of this colloidal theory of glaucoma is furnished by the following clinical observations.

On the relief of clinical cases of glaucoma by conjunctival injections of sodium citrate.

The experiments performed on the enucleated sheep's eyes and described above, has shown not only how acute glaucoma may be produced in an eye but how the development of such a glaucoma can be prevented or once established, may be made to go down again. Because of the danger to the sight in acute glaucoma, it is a matter of great importance to be able to combat this disease.

In the experiments on eyes we became familiar with the fact that the presence of any salt in an acid solution decreased the amount that the eye would swell. Some salts have the tendency to the development of corneal opacities, others not only inhibit absorption but actually decrease the opacities. The use of these salts tends to decrease the steaminess of the cornea which is a sign always present in glaucoma. These salts are citrate, tartrate, sulphate and phosphate of sodium and potassium. After a number of tests Fischer chose sodium citrate as the best salt to be used in clinical cases of glaucoma.

The concentration of the salts varied from 1/8 to 1/6 molecular solution. The injections are made by a fine needled syringe under the conjunctiva, the amount varying from 5 to 15 minims. In the severer cases of glaucoma use the stronger sodium citrate solution and in the milder cases or for subsequent injections the 1/8 molecular solution is sufficient.

Fischer sums up his results in ten cases.

The use of the subconjunctival injections of 1/8 to 1/6 molecular solution of C. P. sodium citrate in clinical cases of glaucoma, is entirely harmless and is always followed by a fall in ocular tension. The effect of such an injection lasts from three to six days and is accompanied by relief of all subjective symptoms of glaucoma except the loss of vision.

Fischer wishes it clearly understood that when the sodium citrate injections reduce tension in glaucomatous eyes this does not constitute a cure for glaucoma. A cure of glaucoma would have to consider the removal of the conditions which are responsible for the production of the substances that increase the affinity of colloids for water. If these are acids, the product of a circulatory disturbance, or of an infection then the real cure for glaucoma resides in a correction of the circulation to the eye or in the removal of the infection. Sodium citrate injections would help this. In the progressive development of a glaucoma the swelling of the colloids compresses the blood vessels entering and passing out of the eye.

Obliteration of the filtration angle is a consequence of glaucoma as in eyes having glaucoma artificially produced, the anterior chamber grew progressively shallower. The matter is explained by the unequal swelling of the different colloids of the eye, those posterior to the lens being capable of greater swelling than those anterior to it. Through this unevenness of swelling the ciliary body is crowded against the sclera and presses on the blood vessels.

THE ADVANTAGE OF A SMALL AMOUNT OF ASTIGMATISM WITH THE RULE.

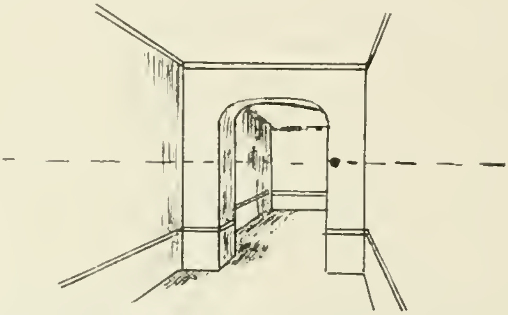
BY

OTTO WIPPER, M. D.

CHICAGO.

The influence which is exerted upon the refractive system by the linear perspective of rooms and interiors in general, and more or less of our street views should be considered in the correction of astigmatism. We will then realize that a slight degree of astigmatism with the rule, say not more than .25 dioptre, is rather a normal condition and even essential for comfortable vision.

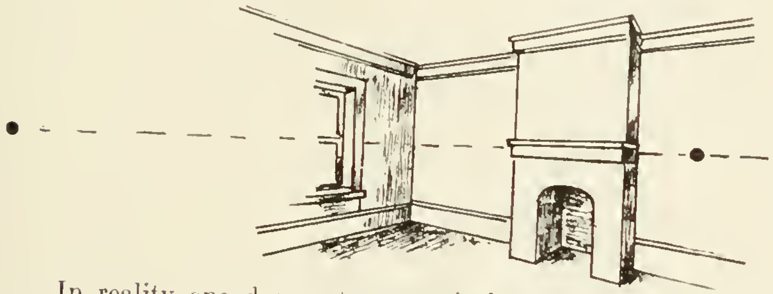
№ 1



The 90 meridian has its greatest power on the horizontal lines, the 180 on the vertical. In astigmatism with the rule, the 90 meridian being the more powerful, the vision of horizontal lines is favored. This should normally be so to some degree, because it takes more effort to see horizontal, than vertical lines.

To illustrate this point I have drawn the two accompanying simple sketches. Number one shows the parallel perspective, in which the opposite walls are at right angle to our visual axis; the horizontal lines of these two walls all parallel to the horizon, while all other horizontal lines of the picture converge to the so-called vanishing point. Number two is given in the angular perspective, and here we find all horizontal lines receding to the vanishing points. On the other hand, all vertical lines in both sketches are parallel to one another and at right angles to the horizon, which is true in all perspective views. Hence, we can readily see that in the perception of images it requires less effort to focus vertical lines than all others, and it seems that nature has been trying to adjust itself, perhaps more for comfortable, than perfect vision. This also accounts for the fact that with so many patients, in whom we find a small amount of astigmatism with the retinoscope, the correcting cylinder has no effect as to the acuteness of vision. Although we should not forget that by irregular ciliary contraction the lens may compensate for the corneal astigmatism, which also goes to show that, in a number of cases, it is impossible to determine the correct amount of astigmatism during cycloplegia. Considering that the transverse diameter of the globe is a trifle longer than the vertical, it seems probable that the 90 meridian of the lens is also slightly more convex than the 180.

№ 2



In reality one does not see vertical and horizontal black lines as shown in these sketches but we perceive them about everywhere, rather unconsciously, by difference in light and color, unless one happens to be outdoors and surrounded by natural scenes. Even in the usual printing type the vertical members of the letters are longer and heavier and all type is arranged in horizontal lines. When the meridian of greatest power is not at 90, the slightest amount of astigmatism is apt to produce symptoms and must be fully corrected. But I think that we should deduct at least .25 dioptre in cases of astigmatism with the rule to insure comfortable vision.

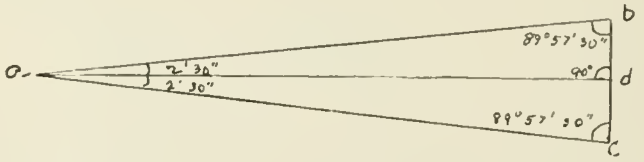
A PLEA FOR THE MORE UNIFORM REPORTING OF VISUAL ACUITY.

HARRY S. GRADLE, M. D.
CHICAGO.

In America, the Snellen type is almost universally adopted for the measurement of visual acuity, but the distance at which the type is employed varies according to the desires, or possibilities, of the individual oculist. The visual acuity is reported in fractions with varying numerators and denominators. Thus, a report, based on a working distance of 15 feet is apt to be puzzling to another individual, accustomed to a 40 foot working distance. 15/15 is intelligible enough and is readily translated to 40/40. But what is the equivalent of 15/18 or 15/50?

That is the excuse for the two tables. In table I, the visual acuity is given in red figures (on the left) in decimal system. The corresponding figures in the subsequent columns are the records of visual acuity at different distances and the size that the letters should be (in centimeters). By means of this chart, the test type may be measured to test the accuracy, and the equivalent value in decimal notation seen at a glance.

Chart II is similar to chart I, but more condensed. On the left are the decimal values of visual acuity and the corresponding figures give the size, the letters should be at the varying distances. The mathematical formula to obtain the proper size is given below:



ad = distance from eye to chart.

bc = size of letter to be determined.

angle bac = 5′; hence angle bad = 2′30″ and angle abd = 89° 57′30″.

$$\frac{ad}{sin\ abd} = \frac{bd}{sin\ bad}.$$

sin abd = 1.000000
sin bad = .000725

$$ad \times sin\ bad = bd \times sin\ abd$$

$$bd = \frac{ad \times sin\ bad}{sin\ abd} = \frac{ad \times .000725}{1}$$

$$bc = 2 \times \frac{ad \times .000725}{1}$$

If the readers of this will keep the enclosed charts and in reporting vision, use the decimal notation, the subsequent reports will be far more intelligible to all readers. This does not involve any change in the test type now in use (provided it is

CHART I.

Left Column = Decimal Notation of Visual Acuity.

Corresponding figures = present style of notation with correct size of smaller letters in cm.

	6M.	L.	10M.	L.	10 Ft.	L.	15 Ft.	L.	20 Ft.	L.	30 Ft.	L.	40 Ft.	L.
2.00	6/3	0.435	10/5	0.725	10/5	0.223	15/8	0.334	20/10	0.445	60/30	0.678	40/20	0.891
1.50	....	....	.....	....	.....	....	.....	....	20/15	0.668	.....	....	40/30	1.336
1.00	6/6	0.870	10/10	1.450	10/10	0.445	15/15	0.668	20/20	0.891	30/30	1.356	40/40	1.783
0.90	....	....	.....	....	.....	....	.....	....	.....	....	.....	....	.....	....
0.88	....	....	.....	....	.....	....	.....	....	.....	....	.....	....	40/45	2.006
0.83	....	....	10/12	1.740	10/12	0.535	.....	....	.....	....	.....	....	.....	....
0.80	....	....	.....	....	.....	....	.....	....	20/25	1.115	.....	....	40/50	2.229
0.75	6/8	1.260	.....	....	.....	....	15/20	0.891	.....	....	30/40	1.783	.....	....
0.70	....	....	.....	....	.....	....	.....	....	.....	....	.....	....	.....	....
0.66	6/9	1.305	10/15	2.175	10/15	0.697	.....	....	20/30	1.337	.....	....	40/60	2.672
0.60	6/10	1.450	.....	....	.....	....	15/25	1.114	.....	....	30/50	2.229	.....	....
0.55	....	....	10/18	2.610	10/18	0.862	.....	....	.....	....	.....	....	40/70	3.121
0.50	6/12	1.740	10/20	2.900	10/20	0.891	15/30	1.337	20/40	1.783	30/60	2.712	40/80	3.566
0.42	....	....	.....	....	.....	....	.....	....	.....	....	30/70	3.121	.....	....
0.40	6/15	2.175	10/25	3.625	10/25	1.114	.....	....	20/50	2.229	.....	....	40/100	4.458
0.37	....	....	.....	....	.....	....	15/40	1.782	.....	....	.....	....	.....	....
0.33	6/18	2.610	10/30	4.350	10/30	1.337	.....	....	20/60	2.675	30/90	4.012	.....	....
0.30	....	....	.....	....	.....	....	15/50	2.228	.....	....	30/100	4.458	.....	....
0.29	....	....	.....	....	.....	....	.....	....	20/70	3.121	.....	....	.....	....
0.25	6/24	3.475	10/40	5.800	10/25	1.783	15/60	2.674	20/80	3.567	.....	....	.....	....
0.22	....	....	.....	....	.....	....	.....	....	20/90	4.012	.....	....	.....	....
0.20	6/30	4.350	10/50	7.250	10/50	2.229	15/75	3.344	20/100	4.458	.....	....	40/200	8.916
0.16	6/36	5.220	.....	....	.....	....	.....	....	.....	....	.....	....	.....	....
0.15	....	....	.....	....	.....	....	.....	....	.....	....	30/200	8.916	.....	....
0.10	6/60	8.700	10/100	14.500	10/100	4.458	15/150	6.688	20/200	8.917	30/300	13.374	40/400	17.832

CHART 11.

Left Column (red figures) = Decimal Notation of Visual Acuity.

Corresponding figures = proper size of Snellin letters in cm. figures for working distance at head of column.

	6 M.	10 M.	10 Ft.	15 Ft.	20 Ft.	30 Ft.	40 Ft.
2.0	0.435	0.725	0.223	0.334	0.445	0.678	0.891
1.5	0.652	1.087	0.334	0.445	0.668	0.891	1.336
1.0	0.870	1.450	0.445	0.668	0.891	1.356	1.783
0.9	0.965	1.609	0.495	0.760	0.989	1.520	1.978
0.8	1.087	1.812	0.557	0.886	1.115	1.772	2.229
0.7	1.242	2.059	0.633	0.931	1.266	1.862	2.532
0.6	1.450	2.407	0.739	1.114	1.479	2.229	2.958
0.5	1.740	2.900	0.891	1.337	1.783	2.712	3.566
0.4	2.175	3.625	1.114	1.671	2.229	3.342	4.458
0.3	2.900	4.828	1.484	2.228	2.971	4.458	5.942
0.2	4.350	7.250	2.229	3.344	4.458	6.688	8.916
0.1	8.700	14.500	4.458	6.688	8.917	13.374	17.832

correct), but merely a simplification of the method of notation of visual acuity.

AN OPERATION FOR THE PREVENTION OF SYMBLEPHARON.

BY

ELMER G. STARR, M. D.
BUFFALO, N. Y.

The operation herein described is the only one which, in my experience, has been successful in preventing adhesion between eyeball and eyelid following destructive injury to the conjunctiva, specially injuries from corrosive chemicals, and involving the fornix.

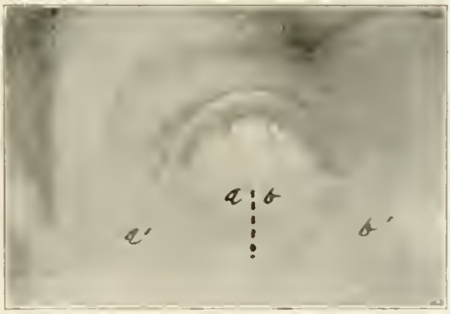
For obvious reasons the conjunctiva of the lower lid and lower portion of the eyeball are most frequently injured in this way.

The operation consists in completely dividing the lower eyelid (when this is the one affected) from its margin well down to the lowest portion of the cul-de-sac and stitching the two flaps or halves thus made, one to the side of the nose, the other to the cheek, where they are kept covered with some bland sterile dressing until new mucus membrane has formed over the injured surfaces, when the cut edges of the lid are "freshened" and stitched together in their normal position. In other words, the injured eyelid is everted and held in this position, thus keeping the injured surfaces separated until healed.

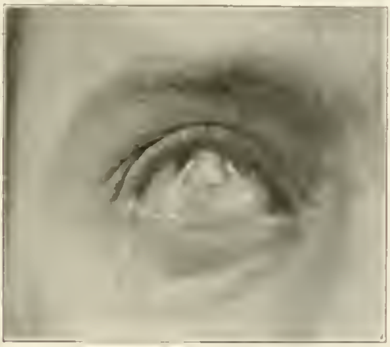
The result, in the majority of cases, is complete restoration of the fornix, and unimpaired mobility of the eyeball.

The accompanying photographs are of a man's eye on which I did this operation more than twenty years ago, following a very deep and extensive burn involving the lower cul-de-sac, with caustic lime. The eyeball is freely movable, as indicated by the photographs, recently made, and, although the cornea is opaque, the eye is free from irritation.

This operation makes it possible to prevent the formation of adhesions between eyeball and eyelid; it facilitates dressing the injured surfaces and, by keeping infectious discharges away from the cornea it materially enhances the prospect of preserving this important structure.



Symblepharon Operation—Line of Incision.



After Operation—Showing Motility of Globe.

CILIARY PROCESSES IN THE PUPILLARY AREA.

BY

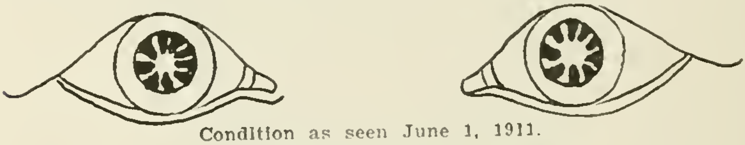
C. A. CLAPP, M. D.

BALTIMORE, MD.

This condition was first described by Siegrist in the Archives of Ophthalmology, Vol. XXVI, page 242, and again by Schweigger, Vol. XXXI, page 24, and Fisher, Vol. XXXI, page 27. And in our experience has only been encountered in one case with the following history:

M. P., Aet. 5 months. Only child. Parents have thought for several weeks that child could not see well. At one month of age arms and legs were paralyzed, which condition lasted one month. Family physician says child has congenital lues, for which he is under treatment.

Upon examination of the eyes the pupils were found immobile to light, dilated slowly with atropin and between iris and lens were seen peculiar fringe-like bodies completely encircling the pupil, being almost black and about ten in number with rounded ends, leaving a very small pupillary space through which the outlines of the nerves could be seen with difficulty and borders seem somewhat blurred. At times the eyes seemed to follow light. In center of right lens a small opacity was noted. The physician was advised to use inunctions actively.



Condition as seen June 1, 1911.

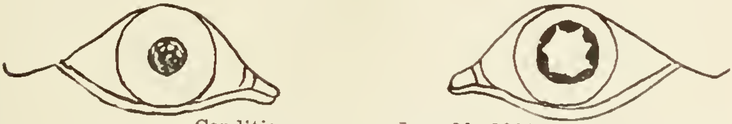
The patient was not seen until one year later, at which time the right eye showed an occluded pupil with complete posterior synechia; eye deviating outward. The left eye then followed the light and the child even picked up articles thrown within its reach. Typical congenital syphilitic choroiditis was present in left fundus. Mother stated that child had been very ill, having had several convulsions. Parents were advised to continue the treatment.

Three years after first visit child was seen again, having grown and developed very well. When left pupil was dilated there was seen a fringe about pupil, but much smaller in extent, infringing upon the pupillary space little more than a half mm., none on the nasal or temporal sides. The nerve was somewhat pale and has about 7 D. of myopia by retinoscopy.

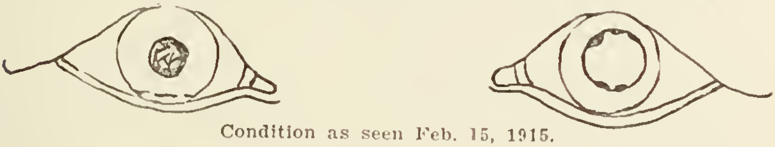
The patient reported upon February 15th, 1915, and the shrinking has continued until but three processes can be seen above and two below, being entirely invisible on both temporal and nasal sides.

Siegrist's case was in a child 4½ years of age and followed a traumatic cataract with apparently an adhesion of the ciliary processes to the capsule, which in cicatrizing drew the processes into the pupillary space. Schweigger's case was in a young man of 22, whose parents had noticed a white membrane before right eye since six months of age, which upon examination proved to be a secondary cataract to which were adherent the ciliary processes, being drawn nearly to the mid-line of the pupil. His eye was also defective with 6/10 vision, and with nystagmus.

Fisher's case was a female, age 4 years, whose parents had noticed a white spot in eye since a few weeks of age. Upon dilatation, which was irregular, there was found a shrunken lens, to which the ciliary processes were apparently adherent. The family history here would also suggest congenital lues.


Condition as seen Jan. 26, 1914.

The pathology of these cases seems to be somewhat similar, a secondary cataract with adherence of ciliary processes, which in retracting drew the processes into the pupillary space.


Condition as seen Feb. 15, 1915.

In our patient the condition was seen in both eyes upon the first visit, and while the right eye was soon rendered impossible of examination by reason of the posterior synechia the left pupil still dilated readily and there was no opacity in lens or capsule. The question arises, "Is this a case of ciliary processes visible in the pupil," or some other condition? The only possible specific lesions that could occur in my opinion would be either tubercular syphilide or gumma (syphiloma) of the ciliary processes. The former is frequent as a result of congenital lues, but the mass is usually localized and grayish or pinkish in color. This also applies to the syphiloma, which are usually associated wtih circumcorneal injection. Von Ewetzky in his classical monograph—Uber das Syphilom des Ciliarkoerpers, 1904—describes nothing simulating this case. Furthermore, if these are over-developed ciliary processes, what was the cause of their hypertrophy with subsequent atrophy?

Wessely, Heidelburg Congress, 1911, was able to show that certain substances injected into the vitreous of animals caused a pronounced hypertrophy and overgrowth of the ciliary processes. (Bile and gallic acid salts.) If certain toxic substances can produce such a condition, then why is it not possible for the toxins of the spirochaetae to cause an overgrowth?

The pathology of this case is certainly different from those of Siegrist, Schweigger, and Fisher, for in their cases it followed a secondary cataract, but in our case the lens is intact.

It can hardly be explained on the ground of lack of development, for in the development of the eye the ciliary processes proliferate inward until the lens is reached, so that any lack of development would leave the processes shortened instead of lengthened.

In support of our supposition that it was due to a specific toxin is the effect of mercurial treatment which has produced a marked shrinking in length and number of the processes.

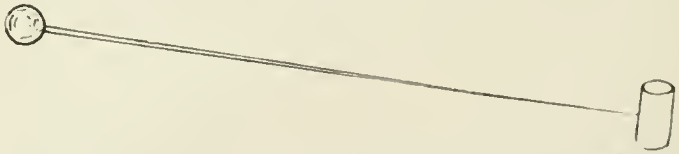
AN IMPROVED HATPIN FOR VISUAL FIELD.

BY

ERNEST E. MADDOX, F. R. C. S.

BOURNEMOUTH, ENGLAND.

Most oculists use a white headed hatpin as a visual object for many rough investigations. I have found its utility greatly increased by running its point into a short cylinder of wood, cork, or rubber tube about half an inch long and of the thickness of a lead pencil. It is highly desirable to have a quick way of verifying the presence of full visual fields in numbers of cases not sufficiently important for the perimeter, and the white headed hatpin makes an excellent test object, but as used at present, the movement of the hand which holds it is also visible and may defeat anything like a quantitative test. The little cylinder held between the finger and thumb enables the hand to be kept perfectly stationary and yet allows the head of the pin to make considerable excursions with an almost insensible movement of the thumb and forefinger. See the cut. By repeating the test with the pin held at greater and greater distances a very fair idea of the visual acuteness in the periphery of the field is obtained.



White Hatpin of Unit Diameter with Cylindrical Grip.—Maddox.

REPORTS OF SOCIETIES

WILLS HOSPITAL OPHTHALMIC SOCIETY.

WILLIAM ZENTMAYER, M. D., CHAIRMAN.

JANUARY 9, 1915.

Epithelioma of the Lid.

Dr. Samuel D. Risley said that the patient had been sent to him three or four weeks previously, when the lower eyelid was drawn strongly downward on account of an epitheliomatous growth, which was thickened and granular. There was coincident involvement of the retrotarsal fold, and very deep involvement of the external canthus. The patient stated that some months before this time, he had had a plaster applied to a little growth on his face, which Dr. Risley imagined to be similar to that then present. The person who had applied the plaster had assured the patient that he had taken the growth out entirely; but, as the result, the lid was drawn downward, and great deformity was produced by the scar-tissue caused by the plaster-treatment.

Dr. Risley induced the patient to have the X-ray applied, which was done with the help of Dr. William M. Sweet, it being then too late to replace the diseased cells with healthy epithelial cells from elsewhere in the body.

The X-ray was applied for three days in succession, this being followed by a rest of three or four days before the procedure was resumed. The patient rapidly grew better. The three or four large islands of rapidly-advancing disease disappeared; the whole surface became healthy; and the improvement was steady up to a time when, for some reason that Dr. Risley was unable to explain, the condition began to grow worse. Dr. Sweet then suggested that they might be doing too much, and thus causing an inflammatory reaction; so the treatment was stopped for a few days. Then applications of briefer duration were made at more frequent intervals. Since that time, the man has steadily improved. During the last week, the applications have been made to a more limited area and for a longer period of time, in order to affect the deeper tissues more strongly than could be done by making the application over a larger area for the same length of time. Indeed, the latter could not have been done without injury to the patient, who is now feeling much more comfortable, the deformity having been largely reduced.

Dr. Risley stated that a growth now present on the face, which had not yet assumed a malignant aspect, was, in his opinion, likely to do so. He had formerly advised the patient to let this alone and not do to it anything likely to cause irritation; but he has now advised her to go to Dr. William L. Clark and have this growth removed by means of desiccation, a method that Dr. Risley had himself employed with good results, having removed several epithelial tumors from the lid of a lady so completely that one could not tell where they had been. One application, of about two minutes' duration, had been required in the case of each tumor. The growth crumbled down, and the patient broke it off. At the end of a month, there was no scar remaining. For about two weeks, she could notice a slight change in the color of this area as compared with that of the skin surrounding it, but later, one could not tell that the growth had ever been there.

Pulsating Exophthalmos.

Dr. William Campbell Posey showed a case of double pulsating exophthalmos, following fracture of the base of the skull, in which the exophthalmos, bruit and other symptoms of the condition had rapidly disappeared after ligation of the right common carotid and resection of the orbital veins. Vision, also, rose from 1/60 to 6/60 in the right eye, but was unimproved in the left, which was practically blind from optic atrophy. Dr. Posey had exhibited the same case at a previous meeting, prior to operation; and the contrast was most striking.

O'Connor Operation.

Dr. Posey exhibited a boy with alternating convergent strabismus of 50°, upon whom he had recently performed an O'Connor advancement operation in both external rectus muscles. Absolute parallelism had been obtained for eight days following the procedure; but on the eighth day, the suture in the left eye had apparently given way, allowing the eye to converge about twenty degrees. Suitable glasses will be prescribed, and parallelism obtained by guarded tenotomie of the internal rectus muscles.

Tansley-Hunt Operation.

Dr. Posey also showed the results obtained in a case of traumatic ptosis from the Tansley-Hunt method. The left lid of the patient, a man thirty years of age, had been almost entirely torn away by a hook; and an extensive plastic operation had been necessary in order to coaptate the lips of the wound and restore the lid to its normal condition and position. Dr. Posey chose the Tansley-Hunt procedure, on account of the cicatricial contractions and thickening of the lid resulting from the injury, in preference to any of the other operations for ptosis; as this method permits of the removal of as much superfluous lid-tissue as may be deemed necessary, and as elevating the lid by means of a broad flap of skin and subcutaneous tissue avoids the nicer dissection of the sublying aponeurosis, which is a feature of the Bass, Wilder and other methods.

Sclerosing Keratitis.

Dr. Posey also exhibited a woman with a typical active tubercular sclerosing keratitis in one eye; and the marks of an old inflammation, of similar type, in its fellow. When first seen, there was a well-marked staphyloma of the uvea in the affected eye; the cornea was densely hazed; and vision was reduced to hand movements. Rapid improvement, with subsidence of the staphyloma, followed hypodermic injections of tuberculin, after the method of von Hippel; and locally, heat, atropin, dionin and careful bandaging.

Optic Atrophy From Ethmoid Disease.

Dr. Posey also exhibited a young girl, blind in the right eye from optic atrophy in consequence of ethmoid disease, in whom the lower temporal field in the left eye had recently become lost. A careful search is being made to ascertain the cause of the loss in vision in that eye.

The Desiccation Treatment of Epitheliomata and Naevi of the Lids and Canthi.

Dr. William L. Clark said that the devitalization of adventitious growths by desiccation is produced by applying to the growth a sustained degree of heat that is not of sufficient strength to carbonize it, but of just sufficient strength to dehydrate it, converting the growth into an inert, desiccated mass. A concentrated, specialized electric current of high potential is utilized for this purpose.

Desiccation, in his opinion, possesses the following advantages:

1. Accessible abnormal tissue may be destroyed rapidly and effectively, and the operation is bloodless.

2. It is a method of precision. A small point may be destroyed without infringement upon normal tissue, as may an area of large size and considerable depth; and there is no danger of injuring the sclera.

3. No needle or other instrument is inserted into the growth.

4. The current has an anesthetizing property, which usually renders the application bearable.

5. There is a devitalizing action on cells of less vitality than normal cells somewhat deeper than the desiccated area, the normal cells recovering.

6. There is sterilization, followed by rapid repair.

7. Blood- and lymph-channels are sealed, which lessens the likelihood of metastasis in cases of malignancy.

8. There is an absence of contracted cicatricial tissue.

In choosing a method for the treatment of epitheliomas, especially those near the eye, said Dr. Clark, the length of time in which there is freedom from recurrence is not the one important point to be considered, and should not be the deciding factor in determining the merit of the method to be employed. After excision of epitheliomas of the lids and canthi, no matter how thoroughly the work appears to have been done, there is a percentage of recurrence. In such cases, if excision is practiced a second or a third time, there is usually unsightly deformity, often with exposure of the eyeball, notwithstanding the best plastic work. This is not true of desiccation, according to Dr. Clark. Should one or several recurrences appear, desiccation may be employed without the deforming results attendant on excision. The objection to the use of radium or the Roentgen ray, caused by the fact that so much time is required to produce the result and by the danger to the eyeball, does not apply to the desiccation method. Accessible tissue may be destroyed by one application, if desired; and Dr. Clark thought that this should always be the aim in cases of malignancy, because it is the keynote of success. This method being a precise one, a pin-point surface, as well as a large area, may be devitalized to a considerable depth; and there is no contracted cicatricial tissue, as is the case after cauterization or the use of chemical caustics.

Dr. Clark's ideas on this subject are not in accord with those of the men who advocate excision of growths of the lids and canthi. Experience has led him to the conviction that excision is the least desirable method of treating localized epitheliomata. He said that anyone who had ever seen such a growth destroyed by desiccation and had observed the results must be impressed with its merits.

J. Milton Griscom, M. D., Secretary.

COLORADO OPHTHALMOLOGICAL SOCIETY.

EDWARD JACKSON, M. D., PRESIDING.

(Continued.)

Dr. A. C. H. Friedman thought that the atrophy may have been due to fracture at the foramen, and said that it would be about as hard for Dr. Boyd to prove that it was not as it would be for him to prove that it was due to the inflammation.

Dr. A. C. Macgruder had seen a similar case and believed that the atrophy may have been due to the cause assigned.

Dr. C. E. Walker said that the sinuses might have been originally at fault.

Dr. F. R. Spencer believed that Dr. Boyd might be right.

Dr. E. R. Neeper had never seen atrophy from such cause but believed it to be entirely possible.

Dr. Edward Jackson cited two cases of atrophy from orbital cellulitis and spoke of atrophy following injection of paraffine into the nose.

Kerato-Irido-Cyclitis.

Dr. H. R. Stilwill presented a woman, age 30, who consulted him January 9th, 1915, and whose vision at that time was O. D. 4/60, O. S. 3/60. The following history was given: Usual diseases of childhood. Had pneumonia 10 years ago. No cough except when she has a cold. Mother died of pulmonary tuberculosis. Her general health is fair. Weight, 115 pounds. Has one healthy child living and has had one miscarriage. No history of lues. Has had trouble with eyes for years. Used to have "ulcers" which were cleared up with "yellow salve." Had glasses fitted by Dr. Strickler 15 years ago.

Last November had an acute inflammation in the right eye and has been under treatment since. There was a similar trouble in the left eye a few months previously but the eye is quiet at the present time.

In the right eye there is circumcorneal injection. Photophobia, but little pain. Not worse at night. The pupil is slightly dilated and irregular. There is a bank of whitish exudate with brownish pigment in the pupillary opening. Iris is not much discolored. There are several small whitish spots in the corneal substance. The tension is minus.

The left eye is quiet. The iris is partially dilated and shows posterior synechia. There are spots of iris pigment on the anterior capsule. Also several spots of interstitial scars.

On January 20th a Wassermann showed negative and a von Pirquet was positive. Patient was seen by Dr. Schultz on January 24th, who found dullness in the right apex and small moist rales on forced respiration and cough. There is also slight dullness in the left apex. She has had four injections of tuberculin (T. R.). The first 1-500000; 2nd, 1-400000; 3rd and 4th, 1-250000 mg. There was no reaction with the first injection, slight reaction following second and a strong reaction after the third.

On February 17th both eyes are quiet except some redness in the right. She has gained three pounds. O. D. V. 5/60; O. S. V. 3/60.

Has occasional pain toward evening, in the right eye.

DISCUSSION. Dr. W. C. Bane first thought it to be luetic but now believed it to be tubercular.

Dr. W. A. Sedwick did not see the case but asked if the patient had been on antisyphilitic treatment before the Wassermann had been made? Dr. Stilwill replied that Dr. McCaw could say more about that than he. Dr. McCaw stated that the case had come to him through Dr. Chase and that she was taking 1½ grs. protiodide a day, and Dr. Sedwick remarked that this may have served to modify the Wassermann.

Dr. F. R. Spencer thought it to be tubercular as it did not look specific to him.

Closing, Dr. Stilwill said that the diagnosis was based upon its slow development, together with the facts that the woman is tubercular and the eye had been gettng worse under specific treatment.

Injury to Eye—Iris Prolapse.

Dr. W. H. Crisp showed a man, age 24, who three days before consulting him, on February 1st, 1915, while driving a staple, was struck in left eye by it.

When first seen there was a fair sized prolapse of the iris at the upper limbus. Prolapsed iris was abscised under cocaine. Atropine instilled before and after.

Dr. Spencer congratulated Dr. Crisp upon the good result obtained.

Proptosis of Right Eye.

Dr. Finnoff presented a girl with this condition, but full report and discussion will be deferred until fuller history is obtained.

Extended Tenotomy for Convergent Squint.

Dr. Edward Jackson presented a young man, age 21, who consulted him November 19th, 1914. His left eye has turned in since he was ten years old. Vision, R. 5/3 partly; L. 5/5 partly. Convergence 45 to 50 centrads.

Correction:

R. Plus 1. combined with —0.37 cyl. ax. 95.

L. Plus 1.75 combined with —0.50 cyl. ax. 10.

December 17th: Convergence 40 to 45 centrads. Extended tenotomy left internus and nasal two-thirds of superior and inferior recti. Two conjunctival stitches which were removed on the third day. There is now slight convergence and he does not possess binocular single vision, but he readily suppresses one image and is not troubled by failure to fuse the images.

DISCUSSION. Dr. F. R. Spencer asked if Dr. Jackson expected greater effect as time went on than that he now had? Dr. Jackson replied that he did not look for decided change in this respect. Dr. Spencer then wanted to know why extended tenotomy was chosen rather than advancement? Dr. Jackson said, because it is the less formidable operation.

Dr. J. A. Patterson inquired, whether at the time of operation, one eye was higher than the other, to which Dr. Jackson replied that insofar as could be ascertained they were level.

Dr. E. R. Neeper raised the question as to choice between tenotomy and resection, saying that he was opposed to advancement and favored resection with attachment of the muscle to the place of original insertion, as the operation was more easily performed and in his opinion gave better results even than an extended tenotomy.

Dr. J. A. Patterson: Would you operate a child of seven without fusion faculty, or would you wait until 12 years of age or later? Dr. Jackson said that he would wait until puberty if fusion were not perfect.

Dr. W. C. Bane spoke of Dr. Melville Black's operation for advancement and the good results that he had obtained from it.

Tuberculosis of the Retinal Vessels.

Dr. Edward Jackson presented two such cases. In the first case the vision got dim in the left eye last May; in the right first of July. Got better, then worse again.

December 28, 1914. Vision R. perception of light: L. 1/45. Vitreous hazy, retina swollen, white and gray masses in the vitreous, R. upper temporal vein very large and tortuous. Left, remains of hemorrhage near vitreous. Dr. Bane reported mastoid and sinuses sound.

January 19, 1915. O. T. injection followed by headache, nausea and pyrexia. February 2, 1915. Vision R. fingers at 3 in., L. 5/12.

His second case gave history of poor vision in September, 1914. In October, R. Fingers at 6 in. vitreous opacities. white spots in macula. Slight anaemia, blood otherwise normal. Negative Wassermann and negative von Pirquet. November 27: O. T. injection followed by temperature of 99.1 and retinal reaction. Special attention was called to the appearance of the vitreous, optic nerve and retinal vessels, particularly the upper temporal.

The doctor stated that he expected to publish full reports of these cases.

Dr. Neeper thought the condition in the first case was due to some general infection, while in the second case during his examination he believed that he detected odor that would indicate necrosis somewhere.

Rupture of Globe.

Dr. C. A. Ringle gave the following report of a case of injury to the eye. "Mr. B. was brought to my office by Dr. Nelson of Windsor, on June 1st, 1914, for an injury of the eye resulting from the sudden release of the lever of a beet cultivator. The lever was described as about 2½ ft. long by 1½ in. wide by ¼ in. thick. Inspection showed a wound along the lower edge of the orbit. The skin on the under surface of the upper portion of the orbit was abraded, from which we infer that the end of the lever passed clear of the upper edge of the orbit, delivering the full force of the blow upon the globe and fracturing the orbital portion of the superior maxillary bone, so that there can now be felt a deep indentation directly below the globe.

When first seen the eye was closed by swelling. Several days later, inspection of the eyeball revealed a profuse hemorrhage in the globe. The globe was very sensitive and painful, with exacerbations at night. There was a dark streak under the conjunctiva about five mm. from the upper edge of the cornea. Absorption of the blood clot continued over a period of several weeks, when finally the eye cleared. The ball was soft, markedly shrunken. Diagnosis: Rupture of the globe, incarceration of the iris in wound; dislocation of the lens and detached retina.

Enucleation was done five months after the injury. The doctor presented the hardened eye for examination.

DISCUSSION. Dr. Bane asked if the injury extended through the ciliary body and Dr. Ringle replied that it did not.

* * *

Dr. A. C. Macgruder asked what procedure should be followed in a child 20 months old, with marked convergent strabismus and 3 D. hyperopia—shall glasses be put on? Dr. Jackson said put them on and probably the child would soon get to the point where it would object to having them off.

E. T. Boyd,
Secretary.

TRANSACTIONS OF THE PHILADELPHIA POLYCLINIC OPHTHALMIC SOCIETY.

February 11th, 1915.

SYMPOSIUM ON MYOPIA.

"The Causes of Myopia"—Dr. W. Walter Watson.

Dr. Watson said that the causes of myopia were to be found in the habits that civilization had fixed on man. All changes that lead to myopia, however, were not attributable to close use of the eyes. He arranged several classifications, a variety either congenital or acquired, and a division of causes into anatomical, mechanical, inflammatory, constitutional and traumatic. The congenital form does not signify that near-sighted children are the offspring of myopic parents, but a tendency under the laws of heredity by which a child inherits from its parents, and more especially myopic parents, the peculiar conformity of skull or weakened tunics of eyes that predispose to its development after birth. Myopia in the embryo by hyper-inclusion of the mesoblastic vitreous into the secondary optic vesicles is uncertain, and the congenital inflammatory types are rare. Myopia exists where parallel rays entering the eyes focus anterior to retina, therefore it occurs when the antero-posterior diameter is disproportionate to the refractive power of the dioptric media, or when there is unusual excessive curvature of lens as in cataract formation, or of the cornea as in conical cornea. With anatomical causes are placed imperfections of orbit development in the vertical diameter, and the low orbit producing by muscle pressure posterior bulging of globe. Also the shape of skull and the size and conicity of the orbit are here considered. Broad heads give wide-set eyes, and shallow deep orbits promote resistance to ocular movements and an anomalous arrangement of the rectus muscles whereby on extreme convergence lateral compression of the globe is produced. This extreme convergence is brought about by demands of civilization, occupation, poor lights in school and workhouse, and small type in print. Associated with this excessive convergence is the excessive accommodation which is in turn encouraged by near vision, for near vision, while theoretically possible without much accommodation in the myope, is not usually accomplished. Therefore myopia uncorrected by glasses is a contributing cause to the progressive form. Next in importance was mentioned the inflammatory causes which move toward a devitalization of the tunics and consequent stretching of the eyeball. Contributory are: iritis, cyclitis, choroiditis, scleritis, inflammation of adjacent tissue, infectious fevers, diabetes, and interference with the choroidal circulation by pressure on the vena vorticosa.

Among other causes Dr. Watson mentioned mild ectatic cicatrices, unusual short optic nerve, alterations of vitreous changing its index, sclerosing of the crystalline lens, and luxation of lens, while last but no least he referred to uncorrected astigmatism by reason of its strain on the ciliary muscle with an enduring irritation.

"The Prevention of Myopia"—Dr. Luther C. Peter.

It is generally conceded that ninety per cent of myopes are due to acquired causes, however, that the ninety per cent can be prevented. It is difficult to measure just how much one can do to prevent myopia. Donders classifies myopia into three groups. First, stationary; second, temporarily progressive; third, permanently progressive. In the latter group are included the malignant types.

The prevention of myopia resolves itself into a question of hygiene. First, hygiene in the home; second, hygiene in the school; third, industrial hygiene.

In home hygiene, such measures as will help the child's general health are essential. Roemer likens the condition to rickets, and uses the term, "scleral malacia," to express the condition. It seems to me this term is very appropriate. In children, therefore, with myopic tendencies, it is essential to pay strict attention to home hygiene, as they inherit the same tendencies and habits which made their parents myopic. Anything that will improve the children's general health is to be encouraged.

Dr. Samuel Risley has called attention to one of the great factors in the development of myopia—that is astigmatism. It is not unusual to see these cases pass from hypermetropia to myopia by the astigmatic route, or as Dr. Risley expresses it, "through the turnstile of astigmatism." I believe that astigmatism has more to do with the development of myopia in the first and second of Donder's classes than any other factor.

Mixed astigmatism is but an expression of the same tendency, as mixed astigmatism primarily resolves itself into simple hypermetropic astigmatism. It is a well known fact that children are born hypermetropic and remain so through life. Myopia is therefore a condition of civilization.

In home hygiene, aside from the general management in the bringing up of the child, I do not think there is anything especially indicated except the care in home work and the age at which the child shall be sent to school. Home study is not indicated in the average child until it is twelve years of age, and the children with myopic tendencies should not be sent to school until they have reached the age of 8 years.

Since the pioneer work begun by Dr. Samuel Risley in 1881, so much good work has been done in the question of proper lighting of school buildings, arrangement and height of the desks, position of the child, etc., that we need not discuss this phase of the question. Every child should have its vision taken accurately at least once a year, and efforts should be made by competent persons to determine the presence or absence of astigmatism. These measurements should be made by an ophthalmologist. If astigmatism is present, it should be corrected. The spheric element is not of so much importance at this time of life as the astigmatic error.

Myopic children should have special classification in the school. Their time spent in the school room should be limited, and the amount of work required of them should be limited. It is a well known fact that the most progressive period of myopia is from 8 to 15 years, and if the proper care is taken of the child during this period, the progress of myopia can undoubtedly be arrested.

Industrial hygiene is a matter of education and training. While the average manufacturer is not a humanitarian, he has enough of the humanitarian spirit, when coupled with the usually astute business foresight, to accomplish the object of the betterment of the conditions of the employed without intervention on the part of the physician. The modern factory is built with due consideration for the employed. I believe, however, that there should be a minimum standard of visual acuity in order to obtain the best results. Employees whose vision falls below this standard should be required to wear glasses.

"The Treatment of Myopia"—Dr. George S. Crampton.

In outlining the treatment of myopia, Dr. Crampton drew attention to the fact that a solution of the proper treatment had been largely reached when due consideraion had been given to the etiology of the condition, together with the institution of certain hygienic preventive measures known to successfully combat an increase in the defect.

While a careful refraction under a reliable cycloplegic such as atropin should first receive attention, our responsibility does not cease here, but our efforts should be directed toward the correction of the faulty habits of the patient. We know the myope to be of the student type, the child who prefers to continue with his books during the recess hour in preference to joining his playmates in the vigorous sports which require clear distant vision.

In the progressive types of myopia it is well to prevent all tendency to a stooping position by supporting the printed page in a vertical manner but little below the level of the eyes, and the patient should live under conditions as far removed as possible from the confining influences and literary environment of civilization.

The balance of the extra-ocular muscles should be determined and the myopic tendency to divergence, if present, should be combated by muscle exercises or in certain cases by prisms or operative measures, if indicated.

The blood and urine should be examined in a search for treatment indications, and the diet should receive attention in order that everything possible may be done to increase the general vitality and muscle tone. A tendency to constipation, if present, should not be overlooked.

Risley, who in 1881, examined a large number of the eyes of children in the Philadelphia schools, concluded that given an emmetropic eye no harm would follow the educational process if proper hygienic measures were adhered to.

That improved hygiene together with the benefits of a prompt correction of the refractive error are bearing fruit can be judged by Widmark's experience in Sweden, where he found a reduction in the number of myopes in the schools from about 40 per cent of all those examined in 1880 to 19 per cent in 1908.

In London Harman found less than 3 per cent myopic after the first five years of school life, but there was a decided trend from hyperopic astigmatism to myopia as time went on, indicating that hyperopia was passing over into myopia.

Weeks divides myopes into three classes: (1) Those to whom full correction may be given for all purposes. These are the cases in which not more than two-thirds of the accommodative power will be employed in close work when glasses are worn, the necessity for undue convergence being thus lessened. (2) Cases in which a full correction for distance can be used with comfort but whose reserve accommodative power in doing close work should be less than one-third. These cases must have weaker glasses for near work than those worn for distant vision. (3) Cases in which the glasses for near vision only can be worn with comfort. These are the victims of high myopia in whom the p. r. is extremely close to the eyes. In these cases the full correction so reduces the size over that to which the patient has been accustomed, that the benefits of clear distance vision are more than outweighed by the annoyance occasioned. Glasses that will remove the p. r. to the ordinary reading distance, namely 30 to 40 cm., will often be worn with perfect comfort and will be preferred for all distances. A special glass may be provided for occasional use when clear distance vision is desired.

When myopia of high degree has been long neglected it is sometimes found that only a poor approach to normal vision can be had with glasses. This is generally due to choroidal changes following the stretching of all the coats of the eye, but cases are occasionally found where the nerve has become atrophic and of course we are more or less helpless to improve the condition. Glaucomatic symptoms are also occasionally found in the long eye of myopia, and when discovered should be treated with miotics.

Eyes previously tropic have been known to become myopic during an attack of glaucoma and have returned to normal after iridectomy. Much has been written in recent years in favor of lens extraction in myopia of high degree, the preferred method of operation seems to be free dicission followed after one or two weeks by evacuation of the lens substance.

Apparently no one advises operation in errors less than 15 diopters, and most authors prefer to reserve operation for cases of a still higher error on account of the resulting hyperopia.

"A Few Cases Illustrating Ocular Symptoms in Nervous Diseases"—Dr. John H. W. Rhein, by Invitation.

Case 1. A man of 43 presented nothing of interest in the family or personal history except that he had had spinal meningitis. In 1910 he consulted an oculist for double vision, from which he recovered. He remained well until September, 1913, when double vision returned and he complained of pains in his feet. On examination it was found that his knee jerks were normal, his station good, the finger to nose test was performed perfectly well, all forms of sensation were intact and there were no bladder or rectal symptoms. He was referred to the eye department, which reported slight palsy of the external rectus only at that time. I did not see him again until comparatively recently, when I found upon examination that his pupils were irregular, that the left pupil did not respond to light and the right one only sluggishly. There was also a palsy of the left inferior rectus and left ptosis, otherwise the examination was entirely negative. The Wassermann reaction on several occasions was negative and I believed I was dealing with a case of non-specific Argyll-Robertson pupil.

A number of cases showing Argyll-Robertson pupil have been reported in literature. Felix Rose collected a number of these cases and published them in the Semaine Médicalé, December, 1912. Only recently I obtained a faintly positive Wassermann reaction in this case and under iodides and mercury the ptosis disappeared and the double vision has almost disappeared. There has been no change, however, in the Argyll-Robertson pupil.

Case 2. This case is shown mainly on account of one symptom which is present, namely, hemianopsia. He applied April, 1914, to the clinic with the history that a few months previously he suffered from an attack of paralysis of the left side of the body. When he was examined at the clinic the paralysis had entirely disappeared so that he could use his hand in his work and he walked without any evidence of paralysis. The tendon reflexes were increased on both sides and more so on the left. The symptom in this case which was especially interesting was the persistent pain of which he complained in the left arm, leg and face. This led to a diagnosis of hemorrhage into the optic thalamus, which was confirmed by the report from the eye department that he had a hemianopsia. He did not have a typical thalmic syndrome, however, there being no hemiataxia, hemiathetosis or sensory disturbances. This case is an example of central pain. The most frequent seat of injury in these cases is the optic thalamus, although the central pain may be present in injury to other parts of the brain.

Case 3. This is a case of major hysteria. The eye symptoms consisted of hysterical amaurosis, hysterical unilateral ptosis, monocular polyopia and tubular fields. In addition to this she exhibited hemi-hypalgesia, paralysis of the anterior tibial group of muscles on the left side and cataleptic attacks. All these symptoms were cured by hypnotism except the polyopia, which still persists. The subject was a girl of 14.

Case 4. Showed hysterical symptoms mainly on the part of the psychic sphere. She has a morbid interest in her physical sensations, daily has some new symptoms consisting of either pains in various localities or believes she has cancer, typhoid fever, some obscure stomach disturbance or whatnot. She has hemi-hypalgesia but otherwise her physical examination resulted in normal findings. On the part of her eyes, she showed marked contraction of her fields of vision with weakness of the muscles of the eye giving rise to double vision. Prof. Reber reported that she had 7 degrees of hyperphoria. All of her symptoms are improving under treatment.

DISCUSSION. Dr. Samuel D. Risley said that he agreed in most respects entirely with what had been said. There is no chapter in ophthalmology which requires more close work and good judgment than myopia.

Before I published the work on School Hygiene, I had a number of cases in which I myself had seen the astigmatism increased. I found them to have a static myopic refraction. I published them in order to fortify the statistics. You are all familiar with the findings of that report in a general way, and after all these years I have seen nothing that would cause me to change a single thing in that report. The gratifying part about it has been that there has been a steady dropping off in myopic eyes, eyes which had been blinded by choroidal atrophy, etc. I think our management of the medical science in these cases has been of more importance than all the operations we have performed.

There are many things to be taken into consideration in the treatment of myopia. The myopic eye is a sick eye. They have fluffy eye grounds and dilated arteries. They are uncomfortable, particularly in a way we do not stop to consider. A myopic eye with astigmatism upsets the balance between the eyes, not only the accommodation but it upsets the range and convergence. And it is this fact, I believe in many cases that accounts for the nervous symptoms we see in patients with this kind of eyes. Therefore I believe cycloplegia should not be used for only an hour and the patient then refracted, but day after day until it often goes into weeks, and having quieted the choroid down by subjective methods, then prescribe glasses. I could relate case after case in which after the vertical deviation was corrected the difficulty disappeared at once.

Dr. Zentmayer said that while he advocated the full correction of myopia, there are individual cases in which it is either unwise or impossible to follow this procedure. As an illustration of the first he cited cases in which there were myopic changes in the fundus and sick, irritable eyes. In these cases it will often be found that patients are much more comfortable with a partial correction, which gives less bright images. He gave the notes of a patient in whom the expedient of giving a partial correction instead of the full correction, which the patient had been wearing, changed her from a recluse to a useful individual. Finally myopes with considerable esophoria are often more comfortable with a partial correction. As an illustration of the second, he cited cases of moderately high myopia who had reached the age of 25 to 30 before taking to glasses. These patients rarely can wear full correction with comfort because of deficient accommodation power.

He agreed with Dr. Peter that the accommodative act was not the most important factor in causing increasing myopia. Hypermetropics of considerable degree are compelled to use excessive accommodation but such eyes rarely show the changes met with in the stretching eyes of progressive myopia. Again myopes of 2.50 to 4 D. often use their eyes for near work without glasses and consequently without accommodation yet such eyes may develop progressive myopia. There is some factor beside the intra- or the extra-ocular tension underlying progressive myopia, possibly a malacia of the tunics, sometimes inherited.

W. Walter Watson, M. D.,
Secretary.

ROYAL SOCIETY OF MEDICINE—SECTION OF OPHTHALMOLOGY.

MR. J. B. LAWFORD, VICE-PRESIDENT.

March 3rd, 1915.

The following clinical cases were shown:

Mr. A. C. Hudson: Two cases of couching of the lens.

Mr. Stephen Mayou: Glaucoma in a boy aet. 17 years.

Mr. G. W. Roll: (1) Bullet wound of orbit; (2) Proptosis.

Mr. Rayner Batten: Vascular Keratitis of upper third of cornea, with terminal perivascular deposits.

Mr. Charles Wray: Conical cornea.

Mr. Leslie Paton read a paper entitled: "The Montessori System and its Use for Children with Defective Vision." He said his attention was called to the value of the system of education in the case of children with defective sight by having a patient aet. 2½ years in whom severe ophthalmia neonatorum had caused blindness in the left eye and very defective vision in its fellow. He was greatly impressed a year later by the boy's general intelligence, and by the fact that he knew his letters and could count small numbers. The parents ascribed this improvement to six months' training which he had received at a Montessori school. The method was most applicable to children between 3 and 6 years of age, the most important period of sensory education. There were several of these schools in the country, but the difficulty was to find the right conductor. It was difficult to resist the temptation to interfere with the child, but the reward came in the child's intense satisfaction when he had succeeded unaided. If the child were really interested in his task, no outside influence would prevent his continuance at it. Even in normal children, most of the exercises were done blind-folded, so as to exercise the tactile muscular and stereognostic senses. By this system vision played but a small part in learning to write; the art was acquired almost as a by-product during the training of the tactile muscular sense. He described, aided by the actual models, the kind of training given, which included the discrimination of various sounds, and rhythm. The method enabled the children to perform, by the assistance of these senses, many complex acts accurately. A difficulty with English children, however, was the fact that English was perhaps the least phonetic of European languages, while the Italian was almost purely phonetic. It left the child to develop its inherent capacities, in opposition to the usual method of inculcating from outside truths in the form of dogma. The children seemed to be unconscious that they were doing more than playing at a most absorbing game, yet they were undergoing self-discipline, and a social recognition of duties to others.

Mr. N. Bishop Harman read a paper on the cognate subject, "The Education of Children with Defective Vision." The claims of the Montessori system were compared with the scheme of "Myope classes" which had been working in this country and America seven years. In Italy the Montessori system had one great advantage over the current modes of education in that it allowed for the personality of the child, and it had proved of great value for mental defectives. But the spirit of England was against anything in the nature of drill-sergeant education, personality having always been fully recognized; moreover, in its technical methods the Montessori system had nothing new to offer, and it had been claimed that a substitution of feeling for sight was a reversion to a lower order of things. If the claim was substantiated that by the Montessori system a child learned to read two years earlier than by the ordinary methods, it effectively condemned the system for children with defective vision; it placed the child too early into the unreal world of books, and there was an absence of childish questioning for information. The Myope class had a natural origin, numbers of short-sighted children had to be dealt with. The scheme resolved itself into three parts: (1) oral teaching with normal children; (2) literary work in the special class where all the work was done on blackboards; (3) handicraft work, which had both utilitarian and "expressional" value; and to this work were attached the practice of history, arithmetic, geography, etc. Despite the regulation forbidding work necessitating stooping and the use of rules and scales, the handicraft work had been highly developed. It was working as a full scheme in elementary schools for children aged from 7 to 14 years; and was also used, with modifications, in the teaching of children in well-known public schools with equal success.

The papers were discussed by Mr. Charles Wray and Dr. G. E. Shuttleworth, and the authors replied.

WILLS HOSPITAL OPHTHALMIC SOCIETY.

S. LEWIS ZIEGLER, M.D., CHAIRMAN.

February 1, 1915.

Paralysis of Intra- and Extra-Ocular Muscles Following Asphyxia at Birth.

Dr. William Campbell Posey presented a child six months old with paralysis of both external rectus muscles. The condition was attributed to asphyxia at birth, the child being born with the cord wrapped about its neck. The child apparently sees, for it will follow the movements of the hand. Ophthalmoscopically, there is nothing abnormal except undue pallor of both optic nerves. There is pupillary inequality, the pupil of the right eye being the larger one day, and that of the left the following day. Once during the examination the child's face became cyanotic, and continued in this condition for several minutes. The mother states that this may occur several times during the day. Dr. Spiller, who studied the case, thought that the aphyxiation might have caused cerebral hemorrhage, but that it had more likely led to cellular degeneration. The absence of spasticity and paralysis shows that the cerebral cortex is not generally affected. The patient is taking syrup of hydriodic acid.

Foreign Body in the Lens.

Dr. Posey also exhibited a young man from whom he had recently removed a fragment of steel that had been embedded in the capsule of the lens, with the result that normal vision was secured. The points of interest in the case were the absence of all inflammatory or reactive signs following the entrance of the foreign body, through the limbus, into the eye; the glistening appearance of the foreign body, as it lay in the pupil, on the anterior capsule; and the slight haze that remained in the capsule after the removal of the fragment with the magnet.

Foreign Body in the Vitreous.

Dr. Posey showed a second man from whose eye he had removed a foreign body. This was a fragment of steel, taken from the vitreous on the previous day, by means of the Haab magnet. He had chosen this instrument in preference to the weaker magnets on account of the small size of the foreign body and the position of the wound, which was a jagged one of the limbus; and because the accident had happened but a few hours previously. An incision through the sclera nearest to the position of the foreign body, as shown by the X-ray, would have produced greater traumatism, and could not have been performed without the etherization of the patient.

DISCUSSION.

Dr. S. D. Risley congratulated Dr. Posey on the ingenious method that he had adopted and upon his success in removing the foreign body from so critical a position on the anterior capsule. In replying to Dr. Posey's inquiry as to the choice of the powerful magnet, instead of a Sweet or Parker, Dr. Risley said that he thought that the choice should depend not only on the location of the foreign body, but also on its size. If the mass were so located that there would be danger of entanglement of the iris or the ciliary body, and if it were relatively large, he thought that it would be prudent to use the lower powered magnets. He had, in one instance, when the foreign body weighed two grains and a half, seen it projected violently from the eye, fastening itself upon the tip of the Haab magnet, ten inches distant; and carrying with it a large amount of the iris, through the wound of entrance, near the corneal limbus. If the smaller magnet should not prove, on trial, to be sufficiently powerful, it would, Dr. Risley said, always be possible to resort to the more powerful instrument.

Dr. Burton Chance said that he thought it quite surprising to note the behavior of the crystalline lens in its reaction to injuries, particularly when there has been the retention of a foreign body in the lens substance. In many cases, he said, the reaction has been noted as being but slight; whereas, that which sometimes follows a minute incision in successful operations is often disastrous. He, too, has observed the singular spending of the force of flying foreign bodies after they have perforated the cornea or sclera, so that they merely become lodged in the superficial layers of the lens. Dr. Risley's recital of a case of perforation by a sliver from a glazed brick recalled to Dr. Chance's memory a case of his own, which had occurred in his early days, while serving during the absence of a much older confrere. A sliver of japan, struck off from the painted hinge of a screen door, had penetrated a man's eye. The spicule had perforated the center of the cornea and, without wounding the iris, had become embedded in the anterior pole of the lens and was projecting from the surface of the lens well into the anterior chamber. The case was seen first two days after the accident. The reaction had amounted only to a mere annoyance; and as Dr. Chance was a stranger to him, the patient refused to allow any treatment designed for the extraction of the foreign body. He reported again on the seventh day after the accident, with scarcely any symptoms; the spicule continued embedded, and, except for a tiny zone about the spicule, the lens was not clouded. The man refused to return for further treatment, and has not been heard of since. Dr. Chance assumes that such wounds of the capsule are clean and smooth and allow the foreign body to become firmly wedged, thus hindering the access of the aqueous to the lens substance, thereby preventing disintegration, with the consequent chemical and mechanical irritation of the uveal tissues.

O'Connor Operation.

Dr. Posey exhibited two children upon whom he had performed the O'Connor advancement operation the week before. One child, aged eight years, had had a convergent squint in the left eye, of 50°. The advancement was aided by tenotomy of the internus of the same eye. Only 20° of improvement was noted. Dr. Posey said that it was but fair to the operation to state that he had departed somewhat from the original procedure, inasmuch as he had included the entire muscle between the catgut loops, instead of the two strands of muscle, as advocated by the author. The muscle strands had buckled up satisfactorily, however, and the immediate effect of the operation had been good. So far as he could judge from the six cases he had operated upon. Dr. Posey thought that the traumatism produced by the operation was greater, and the advancing effect less, than could be obtained from the single-stitch advancement operation, which he usually practices.

Retrobulbar Neuritis.

Dr. Posey showed a middle-aged man with retrobulbar optic neuritis from diabetes. Alcohol and tobacco had been used sparingly by the patient. Rapid improvement followed anti-diabetic treatment, abstinence from alcohol and tobacco, the use of sweat-baths, and the administration of strychnia.

A Case of Neuroparalytic Keratitis.

Dr. William Zentmayer stated that the patient, A. B., a tailor, was forty-eight years of age. His left eye had become inflamed about October 20, 1914. At first there was a small red spot on the inner surface of the lower lid of the left eye, accompanied with a sensation as of a foreign body. Redness and lacrimation had persisted. The patient had been under constant treatment before coming to Wills Hospital on January 10, 1915. The upper central two-thirds of the cornea was without epithelium. There was moderate ciliary injection, and the cornea and conjunctiva were anesthetic. He was treated as an ambulatory case, while awaiting a vacancy in the ward. A protective bandage was worn constantly, and holocaine and atropin were used several times daily. On January 19th the cornea became infected, and hypopyon formed. He was then admitted to the hospital. Smears were negative: cultures showed streptococci. The entire cornea was destroyed in forty-eight hours. A neurologic examination, made by Dr. Weisenburg, showed nothing more than a small area of anesthesia over the distribution of the superior orbital nerve on the left side. The patient had had, for at least thirty years, a general tremor of the head and arms. A radiograph of the skull showed no intraorbital or intracranial lesion. The sinuses were examined by Dr. Skillern and found normal. The Wassermann was negative, notwithstanding the fact that there was a history of chancroid about fifteen years previously. There had been no secondaries. The eye was enucleated.

Complete Ophthalmoplegia Externa.

Dr. Risley presented for study and discussion a case that, on cursory examination, presented the usual features of a complete ophthalmoplegia externa. There was moderate exophthalmos. No considerable deviation of the balls was noted: but both were fixed, or nearly so, except for the ability to move them slightly downward. That the nearly stationary position of the eyes was not due to faulty innervation, but to some impediment in the orbit, seemed probable from the fact that, in the first place, the irides reacted to light: and it was obvious that the patient was able to make unsuccessful efforts to mave the eyes. When the eyelids were everted, a lipomatous mass projected at the retrotarsal fold, and was markedly increased in size by pressing the eyeballs backward. The condition of the eyes was, so far as could be learned, apparently congenital. Dr. Risley had not had the opportunity to make an exhaustive study, as the case had only an hour before been assigned to his service.

(Continued.)

AN EAST INDIAN SCHOOL OF OPHTHALMIC SURGERY.

Lieut.-Col. Henry Smith writes the Ophthalmic Record that in spite of the difficulties raised by the war he proposes to complete his arrangements for the establishment of a great clinical school in Amritsur for the study and practice of operative ophthalmology. Not only will the various methods of cataract extraction be considered, but there will be abundant material available for teaching and demonstrating operative methods in all the other ocular diseases requiring surgical interference. Many Americans will, doubtless, avail themselves of these almost unique opportunities and, judging from past experiences, graduates from this side of the Pacific will receive a hearty welcome.

If such a school could be properly instituted it would not only be a boon to ophthalmic surgeons desiring to perfect their operative technic, but it would be a help to Indian patients, who would directly benefit by the assistance given by the surgeons in attendance.

There seems no reason why Amritsur may not, at least so far as ophthalmology is concerned, take first rank as a teaching center.

C. A. W.

NEWS AND NOTES.

Personals and items of interest should be sent to Dr. Emory Hill, 30 North Michigan avenue, Chicago, Ill.

As these columns go to press on the 15th of the month previous to publication, contributors will kindly send in their items before that date.

Dr. E. T. Boyd of Denver has moved his office to the Century building, Seventeenth and Stout streets.

The optometry bill which passed the House and Senate of the Pennsylvania legislature has been vetoed by the governor.

The American Academy of Ophthalmology and Oto-Laryngology meets in Chicago October 5-7, under the presidency of Dr. Joseph C. Beck of Chicago.

The Michigan School for the Blind has received total appropriations of $125,100 from the legislature of that state for the current year.

Dr. Emory Hill of Chicago has removed his office to the Boulevard building, 30 North Michigan boulevard.

Dr. E. C. Ellett of Memphis was elected president of the Tennessee Medical Association at the annual meeting in Nashville April 15.

The Nettelship medal and prize has been awarded to Mr. E. Treacher Collins of London for his valuable services to the specialty of ophthalmology.

Dr. Jacob H. Hartman, one of the two surviving founders of the Baltimore Eye, Ear and Throat Hospital, has been tendered a banquet and silver service in recognition of his work in behalf of this institution.

The following deaths of ophthalmologists are announced:

Dr. John Lincoln Bromley of Philadelphia, aged 46

Dr. George B. M. Hill of Paris, Ill., aged 51.

Dr. Samuel B. Craton of Syracuse, N. Y., aged 51.

Dr. Michael A. Hughes, of Salt Lake City, aged 64.

Dr. E. G. Nadeau has located at 22 East Washington street, Chicago, to practice in association with Dr. Cassius D. Westcott.

Dr. William L. Noble of Chicago has been elected president of the Illinois State Medical Society.

The officers of the Eye, Ear Nose and Throat section of the Illinois Medical Society for the coming year are: Dr. Joseph C. Beck, president; Dr. Richard Tivnen, secretary.

Dr. Arnold Knapp of New York was guest of honor of the Eye, Ear, Nose and Throat section of the Illinois Medical Society at the meeting in Springfield May 18-20.

At the April meeting of the Colorado Ophthalmological Society, Dr. E. T. Boyd was elected secretary, Dr. H. B. Stilwill treasurer, and Dr. J. A. Patterson member of the executive committee. The society plans a special meeting in Denver on July 22 and 23, at which twelve visiting ophthalmologists will read papers.

Attention should be called to the possible effect of the new Tungsten filament incandescent lamps upon the eyes. The much larger percentage of ultra-violet rays thrown off by these brilliant lamps is capable of producing electric ophthalmia and may be an unsuspected factor in some of our difficult asthenopic cases.

The ambitions of the "optometrists" are revealed again in their program announced for the World's Optometry Congress in San Francisco in July. The would-be doctors are to hear papers on such subjects as "The Nerves of the Eye," "Muscular Defects and Their Treatment," "Anatomy and Diseases of the Eye." Even psychotherapy is suggested as within the comprehensive range of the "optometrist's" interests, judging from the title of one paper—"Mental Law of Sale"!

Wanted—Assistant in Eye, Ear, Nose and Throat practice, in city of one hundred thousand population. None but a first-class man need reply. Address C O the OPHTHALMIC RECORD.

CHICAGO EYE CLINICS.

Hour.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
9 A.M.	Richard S. Pattillo (P.-G.) G. W. Mahoney (Poli.) R. B. Stephenson (P.-G.) Carl Wagner (E.E.N.T.)	*Geo. F. Suker (P.-G.) C. H. Francis (Poli.) A. Duncan (P.-G.) A. G. Wippern (E.E.N.T.)	W. F. Coleman (P.-G.) S. M. Hager (Poli.) H. N. Lyon (P.-G.) Carl Wagner (E.E.N.T.)	G. W. Mahoney (Poli.) Rich'd S. Pattillo (P.-G.) R. B. Stephenson (P.-G.) A. G. Wippern (E.E.N.T.)	C. H. Francis (Poli.) R. B. Stephenson (P.-G.) J. A. Cavanaugh (E. E. N. T.)	S. M. Hager (Poli.) C. W. Hawley (P.-G.) H. J. Morlan (P.-G.) A. G. Wippern (E.E.N.T.)
10 A.M.	Brown Pusey (N.W.U.) Geo. T. Jordan (N.W.U.) Robert Blue (N.W.U.) Every day, 10-12 A. M. Harry Gradle (E.E.N.T.)	J. R. Hoffman (E.E.N.T.)	Harry Gradle (E.E.N.T.)	J. R. Hoffman (E.E.N.T.)	Harry Gradle (E.E.N.T.)	J. R. Hoffman (E.E.N.T.)
1 P.M.	M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) Emily Selby (Inf.) *H. W. Woodruff (Inf.) *Oscar Dodd (Inf.) C. A. Leenheer (Inf.) D. W. Eiss (Inf.) E. R. Cressley (Inf.) C. C. Clement (Inf.) E. V. L. Brown (County) and Geo. F. Suker (County) Daily, 2:30 P. M. W. A. Fisher (E.E.N.T.)	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) E. K. Findlay (Inf.) Wm. E. Gamble (Inf.) J. B. Loring (Inf.) S. L. McCreight (C.C.S.) Robt. Von der Heydt (Inf.) L. G. Hoffmann (Inf.) A. P. Hunneman (Inf.) M. Goldenberg (Inf.) Francis Lane (Inf.) H. Walker (Inf.) W. A. Fisher (E.E.N.T.)	M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) Emily Selby (Inf.) *H. W. Woodruff (Inf.) *Oscar Dodd (Inf.) C. A. Leenheer (Inf.) D. W. Eiss (Inf.) E. R. Cressley (Inf.) C. C. Clement (Inf.) Oliver Tydings (E. E. N. T.)	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) *Frank Allport (St. Luke's) *Frank Brawley (St. Luke's) E. K. Findlay (Inf.) Wm. E. Gamble (Inf.) *Paul Guilford (St. Luke's) *Casey Wood (St. Luke's) *T. A. Woodruff (St. Luke's) J. B. Loring, (Inf.) S. L. McCreight (C.C.S.) Robt. Von der Heydt (Inf.) L. G. Hoffman (Inf.) A. P. Hunneman (Inf.) M. Goldenberg (Inf.) Francis Lane (Inf.) H. Walker (Inf.) W. A. Fisher (E.E.N.T.)	M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) Emily Selby (Inf.) *Oscar Dodd (Inf.) C. A. Leenheer (Inf.) D. W. Eiss (Inf.) E. R. Cressley (Inf.) C. C. Clement (Inf.) H. W. Woodruff (Inf.) W. A. Fisher (E.E.N.T.)	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) E. K. Findlay (Inf.) Wm. E. Gamble (Inf.) J. B. Loring (Inf.) S. L. McCreight (C.C.S.) Robt. Von der Heydt (Inf.) L. G. Hoffman (Inf.) A. P. Hunneman (Inf.) M. Goldenberg (Inf.) Francis Lane (Inf.) H. Walker (Inf.) Oliver Tydings (E. E. N. T.)
3 P.M.	*Wm. E. Gamble (U. of I.) Wm. H. Wilder (Rush) H. S. Gradle Daily 3-5 (E. M. D.)	R. J. Tivnen (M. H.)	W. Allen Barr (C.C.S.) *Wm. E. Gamble (U. of I.)	Wm. H. Wilder (Rush) R. J. Tivnen (M. H.)	W. Allen Barr (C.C.S.)	Geo. F. Suker (P. G.) 2-5 H. Cuthbertson A. Duncan
4 P.M.	W. F. Coleman (P.-G.) H. N. Lyon (P.-G.) 2-5	C. W. Hawley (P.-G.) 2-5 J. F. Campbell (P.-G.) H. J. Morlan (P.-G.)	J. B. Loring (U. of I.) E. K. Findlay (U. of I.) G. F. Suker (P.-G.) 2-5 H. Cuthbertson (P.-G.)	C. W. Hawley (P.-G.) J. F. Campbell (P.-G.) H. J. Morlan (P.-G.)	W. F. Coleman (P.-G.) 2-5 H. N. Lyon (P.-G.)	

*Special operative eye clinic.

ABBREVIATIONS:

C. C. S.: Chicago Clinical School, 1844 W. Harrison Street.

E. M. D.: Emanuel Mandel Dispensary, 1012 Maxwell St.

County: Cook County Hospital, W. Harrison and Honore Streets.

Inf.: Illinois Charitable Eye and Ear Infirmary, Peoria and Adams Streets.

M. H.: Mercy Hospital.

Poli.: Chicago Policlinic and Hospital, 221 W. Chicago Avenue.

P.-G.: Post-Graduate Medical School of Chicago, 2400 Dearborn Street.

N. W. U.: Northwestern University, 2431 Dearborn Street.

Rush: Rush Medical College, W. Harrison and Wood Streets.

St. Luke's: St. Luke's Hospital, 1416 Indiana Avenue.

U. of I.: College of Medicine, University of Illinois, Congress and Lincoln Streets.

THE
OPHTHALMIC RECORD
A MONTHLY REVIEW OF THE PROGRESS
OF OPHTHALMOLOGY

Vol. XXIV CHICAGO, JULY, 1915 No. 7, New Series

ORIGINAL ARTICLES

A NEW HAND CAMPIMETER.

BY
LUTHER C. PETER, A. M., M. D., F. A. C. S.
PHILADELPHIA, PA.
ASSOCIATE IN OPHTHALMOLOGY, PHILADELPHIA POLYCLINIC AND COLLEGE FOR GRADUATES IN MEDICINE. OPHTHALMOLOGIST TO THE RUSH HOSPITAL.

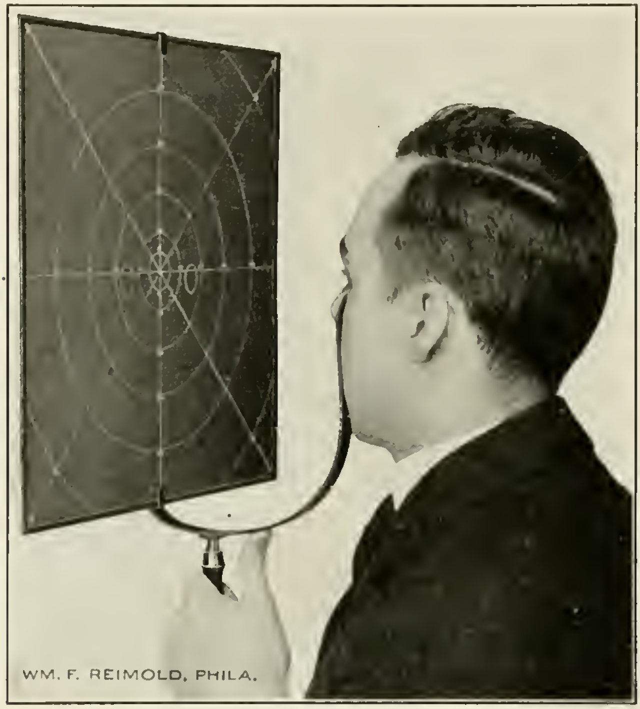
A campimeter or tangent perimeter is an instrument of recognized value in perimetric studies. Its special adaptability to the plotting of the central field, mapping out of scotomata, and the measuring of the field in hysteria, has been recognized; and in later years we have come to regard it as a necessary part of the equipment of the modern oculist. Its limitations, and possibly the size and bulk of the average campimeter, are responsible for the fact that the instrument is not found in every office. In order to overcome these objections and to increase the scientific value of the campimeter, the hand campimeter of the author in its present form was devised.

It consists of a blackboard fourteen inches square, to the bottom of which is attached a metal quadrant of a circle with a radius of six and a half inches, or approximately one-sixth of a meter. The upper end of the quadrant is shaped to the lower eyelid and cheek, and is directly opposite the central point of fixation on the board. The instrument is supported by a handle, and is easily held in position by the patient.

One of the objections to the average campimeter is the great number of lines on the board on the side on which the examination is made, or the inconvenience, for example, of taking readings from the back of the board. These are overcome, or reduced to a minimum by the very light tracing of the lines, as shown in the photograph and chart. After numerous experiments, lines as charted have been found sufficient for the most careful examination of the central field, and not so conspicuous as to be distracting to the patient.

The circles are drawn with mathematical accuracy. The radius of each circle is obtained by multiplying the natural tangent of each angle desired (ten, twenty, thirty, forty, and fifty degrees) by the radius of the arc (six and a half inches, or sixteen centimetres).

A feature which I have not observed on any other campimeter is the charting of the normal blind spot of Marriotte. After studies of a number of cases, I find the average normal blind spot of Marriotte to be twenty-one millimetres long and fifteen millimetres wide, at a distance of six and a half inches, or seven degrees by five degrees. The blind spot is also placed at the average distance from the point of fixation of thirteen and five-tenths degrees. Deviations from these measurements are very slight in the normal individual, the greatest number of variations being in the vertical diameter—this diameter in some instances being only five degrees. By means of this



New Hand Campimeter.

charting of the average normal blind spot, departure from the normal is quickly and accurately noted.

The test object is a small black disc on which is placed the color under examination, which is readily attached to or detached from a thin black rod. Within the twenty degree circle a test object of two mm. in diameter is found to be best adapted, whereas a five degree mm. disc is the best size for studies beyond the twentieth degree.

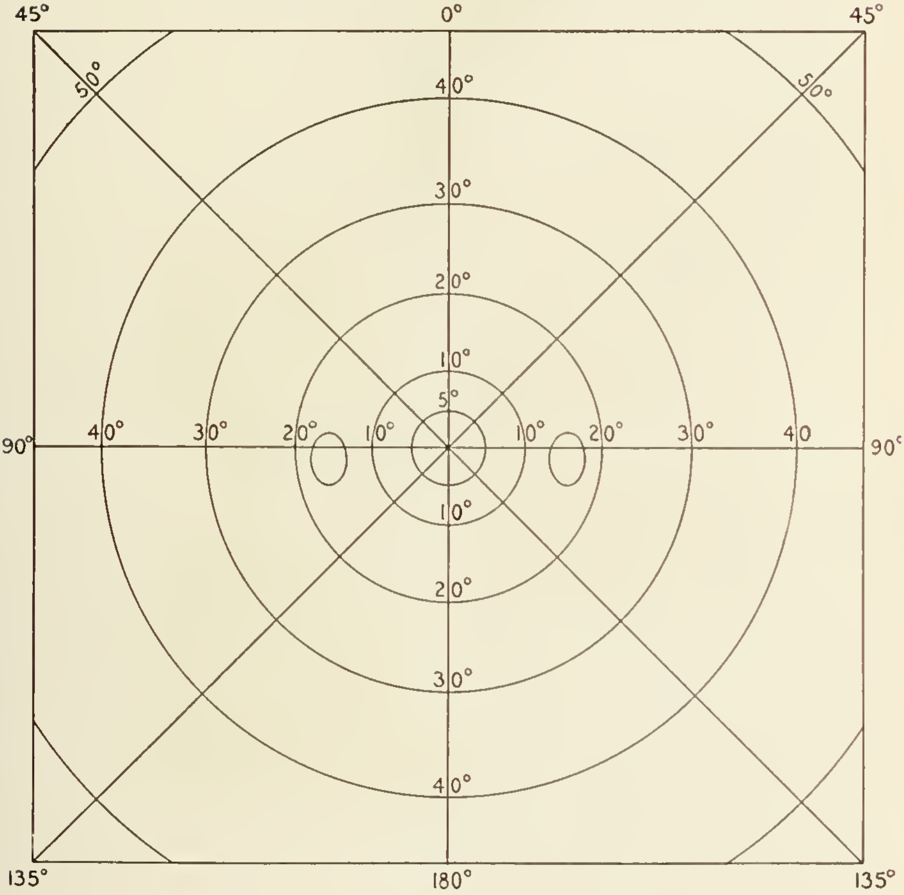


Chart for Recording Campimeter Readings.

The instrument is so light in weight that the examination can be made near a window with the best daylight obtainable, and when not in use it may be packed into a small space and is quite portable.

The general objection to any tangent curtain or campimeter, namely, inaccuracy of the results beyond the forty-fifth degree, is not applicable to the hand campimeter, as it is designed for examination of the central field up to the forty-fifth degree. It practically includes the entire color field.

A specially devised chart is used to record the results of the examination. The chart is an exact reduction of the board, and has the advantage of being free from unnecessary lines which only tend to obscure the field when recorded.

Special mention should be made of the advantage of an examination at so close a range as six and a half inches. The line of separation between blind and seeing parts of the retina is more sharply and more accurately made than at the greater distance suggested in the Bjerrum method and its modifications. In a study of scotomatous areas this fact is well established—colors have a more definite value. Furthermore, qualitative color changes are recognized and indistinct scotomatous areas are mapped out when the ordinary campimeter and arc perimeter fail to reveal them. The instrument rests firmly against the face, and the distance of six and a half inches is uniformly maintained, just as in an examination on an arc perimeter.

It is not intended to replace the arc perimeter or campimeter of usual size. It is, however, especially designed to study the central field up to forty-five degrees, and as it includes practically the entire color field of a normal individual, the instrument may be used in a large number of pathologic cases heretofore studied on the large campimeter or arc perimeter.

The advantages claimed for the hand campimeter are, first, the great advantage of any tangent perimeter over an arc perimeter, namely, flexibility. Second, accuracy in the studying of the central field (a) for color field defects, (b) for scotomata, (c) for changes in the normal blind spot. Third, accuracy of the patient in determining shades of difference in color values at the close range of one-sixth of a meter, when contrasted with studies made at a greater distance. Fourth, lightness and portability of the instrument, admitting of a field study with the best possible day light. Fifth, inexpensiveness of the instrument. The excessive price of the ordinary instrument is a great barrier to its more general use. The hand campimeter can be obtained at a moderate cost.

WIDE-APERTURE LENSES—PUNKTALS AND KATRALS.

BY

CHARLES F. PRENTICE, M. E.,
NEW YORK.

In order to satisfy the stipulation that the focus of an ophthalmic lens shall coincide exactly with the far point of the ametropic eye, it is evident that two lenses of materially different forms (bispheric and meniscus or contrameniscus), placed alternately at the same distance from the eye, must differ in power, because the distance between their respective focal and principal points is then not the same dimension. For instance, the thin meniscus, whose principal points are slightly beyond the outer surface of the lens, and therefore farther from the far point of the hyperopic eye, should be correspondingly weaker than the biconvex trial-lens; whereas the thin contrameniscus, having its principal points somewhat nearer than the inner surface of the lens and closer to the far point of the myopic eye, must be a little stronger than the biconcave trial-lens. See OPHTHALMIC RECORD, June, 1915.

For this reason the representatives of Carl Zeiss in Jena, Germany, have in America introduced a more exact system, devised by Prof. Moritz von Rohr, through which the dioptral powers of ophthalmic lenses are expressed in vertex-refraction (D_v), as reciprocals of their focal lengths, which are counted from the vertices of their back surfaces, irrespective of typical lens-form. This principle applies advantageously to all lenses of wide aperture and especially to the so-called Punktal Lens, which is numbered in vertex-refraction and designed to eliminate the astigmatism due to oblique light-incidence and to render available a field of view of about 60°, in order that objects viewed through the extreme marginal zone of the lens may be seen as distinctly as through its center. In other words, each point of the object is faithfully reproduced as a distinct point in the image formed by the Punktal Lens, which is either a meniscus or contrameniscus, whose base-curve is concave and different for each power between 0.25 D_v and 20 D_v, the other surface being either spheric or toric. However, there is a notable exception, namely, when the power of the *convex* Punktal Lens exceeds 7 D_v it is called a Katral Lens, in which the base-curve is made *aspheric,* in order to correct the aberration for the full aperture of a meniscus of high power. Punktal inner curves vary by 0.0012 meters and sometimes less, being ground and polished with the same care as a photographic objective, so that, if bifocal lenses are desired, they can only be made in the fused type.

Punctilious application of vertex-refraction entails provision being made for determining the exact distance between the cornea of the eye and the back surface of the trial-lens in a trial-frame of special construction; this being supplemented by an instrument, dioptrometer, which accurately measures the lens of any type that may be subsequently used to substitute the lens or lenses in the trial-frame. To facilitate this substitution without the measuring instrument tables are supplied through which may be ascertained the vertex-refraction of the ophthalmic lens that is required to be worn at a prescribed distance from either the myopic or hyperopic eye, because such indicated powers are dependent upon the distance between the cornea and the proximate vertex of the accurately adjusted trial-lens. As this interpolar distance naturally varies with the facial anatomy peculiar to different individuals, it is necessary in the tables to give it specifically different values from 4mm. to 20mm. If the correcting lens is to be a meniscus or contrameniscus, allowance must also be made for the vertex-depth of its concave surface, since the pole of this lens, with respect to the interpupillary plane of the frame, will be farther from the eye than the pole of the lens used in the trial-frame, and from whose vertex the interpolar distance is measured.

Therefore, still another table, III, of corrections is supplied, in which the vertex-depths, in millimeters, are given for a series of concave surfaces, varying in power between —1D. and —20D., upon lenses whose diameters vary by millimeters between 34mm. and 46mm. In fact, strict compliance with this table is of greatest moment when prescribing menisci and contramenisci or Punktal and Katral lenses whose powers exceed 3.5D_v. None of these lenses admit of being neutralized by each other, or by lenses of other types.

Reverting to the first mentioned tables we find 17 different dioptral powers (D_v) of vertex-refraction are introduced as equivalents for each of the powers of the ordinary dioptral lenses that are placed at the same number of distances from the cornea.

For instance, the regular trial-lens of +4D., whose pole is 4mm. from the cornea, is equivalent to +3.9D_v, whereas, if placed at 12mm., it is $+3.75D_v$, or, if at 20mm., it is $+3.7D_v$. Consequently, in order to secure the full benefit of this exploited precision, accurate measurement of the actual interpolar distance is of the utmost importance, if indeed the lens that precisely corresponds to it can be supplied within the range of dioptral values given in the tables as equivalents and needful substitutions in vertex-refraction, and which would, of course,

Myopic Eyes

Table I.

Axial Refraction in Diopt.	Vertex Refraction of Correcting Lens for a Distance in Millimeters between Vertex of Lens and Vertex of Cornea Equal to																
	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
− 3.00	3.05	3.05	3.05	3.10	3.10	3.10	3.10	3.10	3.10	3.15	3.15	3.15	3.20	3.20	3.20	3.20	3.20
− 3.25	3.30	3.30	3.30	3.35	3.35	3.35	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.45	3.50	3.55	3.60
− 3.50	3.55	3.60	3.60	3.60	3.60	3.65	3.65	3.65	3.70	3.70	3.70	3.70	3.70	3.75	3.75	3.80	3.80
− 3.75	3.85	3.85	3.85	3.85	3.90	3.90	3.90	3.95	3.95	3.95	3.95	4.00	4.00	4.00	4.05	4.05	4.05
− 4.00	4.10	4.10	4.10	4.10	4.15	4.15	4.20	4.20	4.20	4.25	4.25	4.25	4.30	4.30	4.35	4.35	4.35
− 4.25	4.35	4.35	4.40	4.40	4.45	4.45	4.45	4.50	4.50	4.50	4.55	4.55	4.60	4.60	4.60	4.65	4.70
− 4.50	4.60	4.65	4.65	4.70	4.70	4.75	4.75	4.75	4.80	4.80	4.85	4.85	4.90	4.90	4.90	4.95	5.00
− 4.75	4.90	4.90	4.95	4.95	5.00	5.00	5.00	5.00	5.10	5.10	5.10	5.15	5.20	5.20	5.25	5.30	5.30

Hyperopic Eyes

Table II.

Axial Refraction in Diopt.	Vertex Refraction of Correcting Lens for a Distance in Millimeters between Vertex of Lens and Vertex of Cornea Equal to																
	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
+ 3.00	2.95	2.95	2.95	2.95	2.90	2.90	2.90	2.90	2.90	2.90	2.90	2.85	2.85	2.85	2.85	2.85	2.80
+ 3.25	3.20	3.20	3.20	3.15	3.15	3.15	3.15	3.10	3.10	3.10	3.10	3.10	3.10	3.10	3.05	3.05	3.05
+ 3.50	3.40	3.40	3.40	3.40	3.35	3.35	3.35	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.25	3.25	3.25
+ 3.75	3.70	3.65	3.65	3.65	3.60	3.60	3.60	3.60	3.55	3.55	3.55	3.55	3.50	3.50	3.50	3.50	3.50
+ 4.00	3.90	3.90	3.90	3.90	3.85	3.85	3.80	3.80	3.75	3.75	3.75	3.75	3.75	3.70	3.70	3.70	3.70
+ 4.25	4.15	4.15	4.10	4.10	4.10	4.10	4.05	4.05	4.05	4.00	4.00	4.00	4.00	4.00	3.95	3.90	3.90
+ 4.50	4.40	4.40	4.35	4.35	4.30	4.30	4.30	4.25	4.25	4.25	4.20	4.20	4.20	4.15	4.15	4.15	4.10
+ 4.75	4.65	4.65	4.65	4.60	4.55	4.55	4.50	4.50	4.50	4.50	4.50	4.40	4.40	4.40	4.35	4.35	4.35

Vertex-Depths of Ophthalmic Lenses

Table III.

Curvature of the Hollow Surface of Lens	For Diameters in Millimeters Equal to												
	34	35	36	37	38	39	40	41	42	43	44	45	46
− 3.00	0.9	0.9	1.0	1.0	1.1	1.1	1.2	1.2	1.3	1.4	1.4	1.5	1.5
− 3.25	1.0	1.1	1.1	1.2	1.2	1.3	1.3	1.4	1.4	1.5	1.6	1.6	1.7
− 3.50	1.1	1.2	1.3	1.3	1.4	1.4	1.5	1.5	1.6	1.7	1.7	1.8	1.8
− 3.75	1.1	1.4	1.4	1.3	1.4	1.5	1.6	1.6	1.7	1.8	1.9	1.9	2.0
− 4.00	1.2	1.2	1.4	1.4	1.5	1.6	1.6	1.7	1.7	1.8	1.9	2.0	2.1
− 4.25	1.2	1.3	1.3	1.4	1.5	1.6	1.7	1.7	1.8	1.9	2.0	2.1	2.2
− 4.50	1.3	1.4	1.5	1.5	1.6	1.7	1.8	1.8	1.9	2.0	2.1	2.2	2.3
− 4.75	1.4	1.5	1.6	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5

These tables are abbreviations of the originals covering the full range of powers between 0.25 and 20 dioptries.

represent an unprecedented degree of precision among ophthalmic lenses.

However, for the present the range of powers in vertex-refraction for Punktal lenses is being confined to quarter-dioptry intervals, so that the actual vertex-refraction of the ordinary trial-lens of a given number will in practice have to be substituted by the nearest available power of a Punktal lens that is to occupy the same position given in the tables, I and II. Still, this *method* of substitution may be conveniently avoided through the use of the vertex-dioptrometer, which measures the dioptral refraction from the vertex of the lens instead of from the principal point.

Both surfaces of the Punktal lens are mathematically calculated upon the assumptions that the back surface of the lens is 25mm. from the center of rotation of the eye-ball, and that the lens and the refractive media of the eye together constitute an optical system in which the cross-section of the refracted pencil of light at this center of rotation is the exit-pupil of the system. This motive being strictly complied with makes it evident that the relative proportions to each other of the front and back surface-curvatures necessary to provide a range of powers in Punktal lenses can only in very exceptional instances, if any, be the same as those of the ordinary menisci and contramenisci having standard base-curves of 6D. or 9D. and which, "because of their similar correction of astigmatism in the marginal parts, have a useful field of view of 52°." Therefore, it remains to be seen whether a greater variety of well chosen base-curves applied to the latter may not after all suffice to produce an inappreciable difference when such improved wide-angled lenses are practically applied, especially as the fields of view of similar lenses are now only 4° less at the margin than in Punktal lenses. In fact, this proposition would merely involve "bending the lens" in strict accordance with the formulae known to physicists* long before the successful attempt was made by Dr. M. von Rohr to correct the aberration in lenses of high power by means of the *aspheric* surface, and which is now exclusively applied to and admitted to be necessary only in menisci and contramenisci above $7D_v$.

In this intimated and impending circumvention unfortunately lies the probable menace to the Punktal lens and to the conscientious optician who sells it, since the higher price of this lens, even though it is identifiable by an almost invisible trade-mark, provides the opportunity among his competitors to substitute for it an ordinary meniscus of lesser value or an improved wide-aperture meniscus, or contrameniscus, at the same price. Even if an exceptional emergency did justify such action, one must anticipate unethical conduct at a time when *professed* scientific judgment is being so generally exercised by persons who have never attended a college of any sort.

---

*Principles of Geometrical Optics.—Southall.

However, this does not lessen the intrinsic merits of the Punktal lens, which is unquestionably the most scientifically devised ophthalmic lens as yet produced, even though in some powers it may be objectionably thick.

Aspheric Lenses.

Dr. Moritz von Rohr, physicist, of the firm of Carl Zeiss, Jena, Germany, at the suggestion of the ophthalmologist, Dr. A. Gullstrand, Upsala, Sweden, mathematically determined the curvatures of the so-called Gullstrand Cataract Lens, which is provided with a concave surface that is more acutely curved near its periphery, a spheroid surface, which Dr. von Rohr calls an *aspheric surface,* whose function it is to counteract the astigmatism produced by the oblique ray-bundles that would otherwise enter the eye when the visual axis is directed through the peripheral parts of a spheric lens of high power, and such as is required to correct the refraction in aphakia, whether paraxial astigmatism is present, or not.

Lenses of this type, from $+7D_v$. upward, being designed for surgically operated cataract cases, are now being sold as Katral Lenses, which have the same optical properties as Punktals.

In a Katral lens of $12D_v$. the radius of the osculating sphere is actually 140mm., and the difference of the aspheric surface is only 0.16mm., which shows the extreme precision applied in their manufacture.

At a meeting of the Ophthalmological Society in Heidelberg, 1910, Dr. von Rohr exhibited photographic plates which demonstrate that Gullstrand's cataract lens, in this instance an *asphero-toric meniscus,* permits excursions of the visual axis from the pole of the lens toward its periphery to the extent of 30° in one of its principal sections, and 36° in the other, with greater freedom from aberration than is obtained for a similar excursion of 12° behind a sphero-cylindric lens intended to correct 13D. and 7D. of refraction in the principal sections of the eye that are inclined to each other at an angle of 45°.

Katral Lens.

However, applications of the Katral Lens involve intricate calculation being made for its construction, the same being based upon definite information respecting the distance between the cornea of the eye and the proximate surface-vertex of the inner trial-lens in the trial-frame, either in case a spheric or sphero-cylindric lens is used in it for distant vision, or for reading at a specified distance. Similar specifications are required in order to calculate the curvatures of a contrameniscus for extreme myopia. The cost of a pair of Katrals is said to be about $75.00.

Incidentally, it may be mentioned that aspheric surfaces have been produced at the Zeiss works ever since 1899, yet their applications were later confined chiefly to the finer wide-angled condensers for the substage of the compound microscope, and in 1910 Dr. von Rohr incorporated the aspheric surface in the aplanatic lens used in Gullstrand's ophthalmoscope, which is constructed especially to obviate the extraneous light-reflections from the observed eye. In 1908 Dr. von Rohr gave credit to his colleague, O. Henker, for having perfected the mechanical agents through which Gullstrand lenses were produced and photographically tested to prove their efficiency.*

---

*Die Theorie anastigmatischer Starbrillen, M. von Rohr.—Bericht ueber die XXXV Versammlung der Ophthalmologischen Gesellschaft, Heidelberg, 1908.

Ueber Gullstrandsche Starbrillen mit besonderer Beruecksichtigung der Korrektion von postoperativem Astigmatismus, M. von Rohr.—Bericht ueber die XXXVI Versammlung der Ophthalmologischen Gesellschaft, Heidelberg, 1910.

Ueber neuere Bestrebungen in der Konstruktion ophthalmologischer Instrumente, M. von Rohr.—Bericht der XXXVII Versammlung der Ophthalmologischen Gesellschaft, Heidelberg, 1911.

HYPERTROPHY OF THE CONJUNCTIVA.

(Case Report.)*

BY
WILLIAM T. SHOEMAKER, M. D.
PHILADELPHIA, PA.

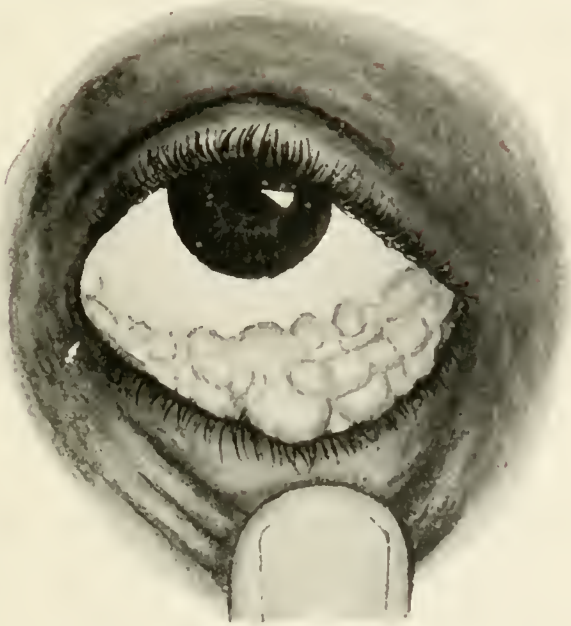
Patient is a colored boy now 14 years of age, who aside from his ocular condition would seem to be in standard health. His left eye has remained essentially as it now is for at least 3 or 4 years. He has been a patient at five different hospitals in this city, so he has doubtless been seen and examined by some of the gentlemen here tonight.

---

*Presented before the Lecture on Ophthalmology, College of Physicians of Philadelphia, October 15, 1914.

The condition might be described as an enormous overgrowth of the lymphoid elements of the palpebral conjunctiva and that of both lower and upper fornix, throwing the conjunctival surface into many tumor-like elevations, crowded together, and thus more or less polygonal in form. They are particularly numerous in the upper fornix; the upper tarsal conjunctiva and bulbar conjunctiva have remained relatively free. The lids are thickened and heavy; the palpebral fissure is narrowed.

There have been no pain, no itching and no secretion other than tears. The right eye shows evidences of a similar process, but has never been so bad. Several years ago a small piece was cut from the conjunctiva and sent to the laboratory. A report was returned simple hyperplasia. Efforts have been made to secure another and a more elaborate examination, but the boy and his mother have decided that there shall be no more cutting.



Hypertrophy of Conjunctiva.

I have been unable to make a satisfactory diagnosis of this condition. There are several conjunctival diseases that it *might* be, but it would not seem to accurately correspond to any of them. If tuberculosis, for example, it does not well fit into Eyre's classification, unless perhaps it would come under his Group II, characterized by the presence of greenish or yellowish sub-conjunctival nodules, seldom larger than a hemp seed. This condition, according to Eyre, through growth and proliferation of the tubercles, passes into Group III with its florid hypertrophied papillae and outgrowths of granulation tissue, springing usually from the fornices.

The case under discussion, however, is of very long standing, and has not seemed to be inflammatory, in which case it might be a degeneration. The possibility of belonging to that very rare variety of conjunctival disease known as hyaline, amyloid or colloid degeneration has been considered, but my limited knowledge of this condition would not justify more than a thought or two in this direction. Some encouragement, however, is given to this idea, by two cases of hyaline degeneration, described by Vossius. They occurred in young, otherwise healthy subjects. They exhibited firm, smooth, pale reddish-yellow tumors growing from the neighborhood of the fornix. These consisted of masses of adenoid tissue with hyaline degeneration, which gave the hyaline reactions with suitable reagents. Most of the cases reported have come from Russia. At the time the sketch was made, 2½ years ago, the appearances were not unlike those described by Vossius.

A substance called hyaline was first described by v. Recklinghausen. Raehlmann first found this substance in the Conjunctiva, and regarded it as a precursor of amyloid, and Kubli recognizes four phases of the disease or condition as found in the conjunctiva: 1. Simple adenoid proliferation; 2. Hyaline degeneration; 3. Amyloid degeneration; 4. Calcification and ossification. My case made a fair start; and may now be progressing along these lines.

109 South Twentieth Street.

PRIMARY SYPHILIS OF THE CONJUNCTIVA—FIBROMA OF THE ORBIT.*

BY

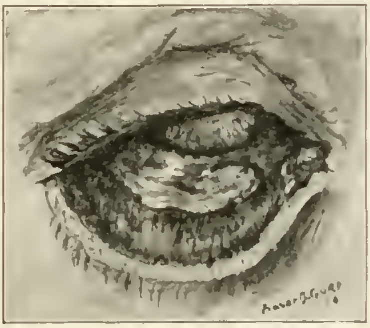
GEO. H. MATHEWSON, M. D.,

MONTREAL, CANADA.

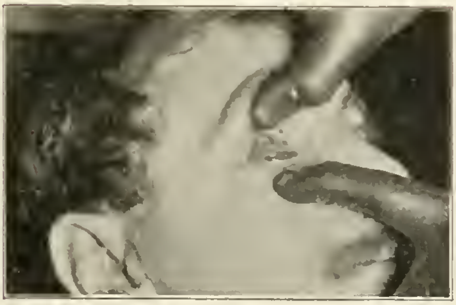
On February 12th, 1914 a man of 33 years of age came to me complaining of discomfort in the right eye. The right lower lid was greatly thickened, and the thickening was due in great part to a lardaceous swelling of the conjunctiva. On everting the lid an ulcer was seen down near the bottom of the fornix. This ulcer was almost 4mm.x2mm. in extent, and rather shallow. It can be well seen in the drawing made for me by Dr. Fraser B. Gurd. The right preauricular gland and the glands in the right submaxillary region, were much swollen, while the glandular apparatus in other parts of the body was normal.

---

* Read at the Montreal Medico-Chirurgical Society, March 5, 1915.



Syphilitic Ulceration of Conjunctiva.



Syphilis of Conjunctiva with Enlargement of Preauricular Gland.

The accompanying photograph by Dr. Gordon Campbell brings out this glandular enlargement very well. The man was admitted to the eye ward at the General Hospital for a Wassermann test which proved strongly positive. The ulcer was then examined for Spirochaetes, by Dr. R. P. Campbell, who found them present in large numbers. Under Salvarsan and Mercury the ulcer and glandular swelling cleared up rapidly and completely, with but little local treatment.

The nature of the ulcer is seen from the foregoing to be undoubtedly syphilitic, and I believe when you take the appearance of the ulcer with the localized glandular involvement and the presence of spirochaetes in great numbers there can be little doubt that it was the primary sore. The source of the infection is not certain. Being a mechanic the man had foreign bodies removed from his eyes at frequent intervals by men in the shop and it is possible that the instrument used for the purpose may have carried the infection.

Fibroma of the Orbit.

On September 23rd, 1914 a man (J. Y.) 54 years of age came to consult me with regard to a tumor which was causing his right eye to bulge.

The eye-ball was found to be proptosed 1.5cm. but in spite of this it was freely movable. The cause of the proptosis was seen to be a large tumor which occupied the upper outer part of orbit and extended a long way in toward the apex of the latter.

RV = less than 6/60 + 2.50 spher. = 6/18
LV = less than 6/60 + 2.50 spher. = 6/9

There was a slight optic neuritis on the right eye. The man gave the history that the eye-ball began to be prominent three years ago after an attack of typhoid fever. There was never any pain, loss of weight nor impairment of health. He was however very nervous from fear that the tumor was malignant. It seemed from the history and symptoms and position of the tumor that it was an adenoma of the lachrymal gland, and I made this diagnosis. To make sure however I gave him potassium iodide for three weeks. As there was no change after this time I operated in October, by making an incision in the line of the eyebrow, through which I easily shelled out the tumor which was sharply defined from the surrounding tissues. It was irregular in shape being roughly pear-shaped and about the size of a hen's egg, but flatter. Histologically it was found by Dr. Rhea to be a pure fibroma. The tumor measured 3.5mm.x2mm.x2mm.

A CASE OF GONORRHEAL IRITIS FOLLOWING TRAUMATISM.

BY

ROBERT SCOTT LAMB, M. D.
WASHINGTON, D. C.

For the sake of pointing out the extreme difficulty in differential diagnosis, and the very great tendency to error by being satisfied with the apparent cause of inflammation, I take this opportunity to write the history of the following case:

D. V.—age 32—jeweler—while trying to place vase on mantel shelf in a dark room, missed the shelf and broke the vase, pieces of which struck him, cutting both eyelids of left eye, requiring fourteen stitches.

The accident occurred on Monday, February 1, 1915. On Thursday he developed eye symptoms—that is, pain in eyeball itself, and one of the physicians doing special work was called in to see him. The diagnosis was evidently glaucoma, as indicated by medicines used for relief.

I first saw the patient on Friday, February 5th, at 6 p. m., in consultation, and found the eyeball very much reddened—the lids so swollen as to need retractors to obtain a clear picture of the eyeball. The anterior chamber was very deep, the iris funnel shaped, bound down at the anterior surface of the capsule of the lens. This must have been complete, in view of the fact that the eyeball had a tension of +3. There was just that indefinite something about the case which led me to suppose there was something more as a basic cause than a mere injury, in view of the fact that the eyeball had not been injured, and several days had elapsed before evidences of inflammation of the eyeball.

During my conversation with the family physician I suggested gonorrhea as a probable cause of the unilateral iritis, causing adhesions sufficient to bring about iris bombe and intraocular tension of +3. The physician admitted treating an attack of gonorrhea five weeks previously which was supposed to have been cured.

My local treatment was the administration of drops of 1% Atropin and 5% Dionin, every three hours, to be followed by hot applications; my suggestion to the physician was that sensitized bacterine be used immediately. Personally I used one drop of 3% Atropin and quantity sufficient of Dionin powder. The patient obtained almost immediate relief from the excruciating pain and the next day the pupil was dilated, the secondary glaucoma had entirely disappeared and the patient was comfortable.

The first injection of bacterine was given Friday night and two other injections were given about thirty-six hours apart.

The contrast was most striking; Friday night the young man was perfectly willing to have the eye removed, if necessary, in order that the pain might disappear; Saturday he was seeing out of the eye and quite content with life. In the course of a few days the patient was well on the way to recovery, and has had no trouble since.

In conclusion I would suggest that this is one of the most striking instances where it is perfectly natural to take for granted that the injury was the cause of the iritis; and this case is reported merely to be of assistance to some who may read, and therefore possibly be inclined to suspect some general underlying condition as the real cause of an inflammation.

NEW RETRACTOR FOR EXTIRPATION OF THE TEAR SAC OPERATION, EXTERIOR FRONTAL SINUS OPERATION AND INFANT MASTOID OPERATION.*

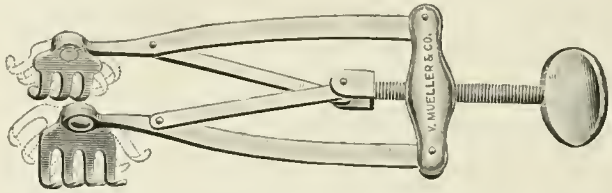
BY

DERRICK T. VAIL, M. D.

CINCINNATI, O.

The instrument shown in the accompanying illustration has served me so well in performing the three operations mentioned above, that I desire to put it before the profession.

I had it constructed about six years ago, ample time to prove its value. I have used other retractors for these operations and prefer this, as it possesses many advantages. It is constructed from Allport's mastoid retractor, the working ends of which were removed and these swinging "hands" substituted.



Retractor for Tear Sac, Frontal Sinus and Infant Mastoid Operations.

After the incision, (which in all these operations mentioned should be made boldly through skin, fascia and periosteum) the periosteum is stripped back a short distance and the

---

* Shown at the Chicago Ophthalmological Society, February 15, 1915.

"finger" ends of this retractor are inserted vertically, so that the deepest tissues will be engaged with the arms closed. The "fingers" dovetail to permit easy application through the smallest incision. The screw is then used to separate the arms and when the bone is well exposed, the instrument is "broken" at the "wrists" and made to lie away from the field of operation by simply turning it to either side like a lever. Bleeding is thus at once controlled and the field is well exposed, dry and ready for the further steps of the operation. It will be seen that this instrument lends itself to facilitate Axenfeld's operation for tear sac extirpation, which I believe consists in making the curvilinear incision on the side of the nose from below the root of the eyebrow half way down the side of the bony bridge with the idea of missing the lachrymal sac. The periosteum is raised on the sac side so that the periosteotome will drop into the lachrymal fossa behind the sac. This retractor is then applied, the belly of the sac grasped in good forceps and the extirpation completed with scissors dissection.

This operation takes from ten to fifteen minutes' time to complete and may be done with local or general anesthesia. The incision is neatly closed by interrupted sutures, deeply applied, and a wet gauze-ball pad is applied with rather tight bandage to hold the tissues deep in the cavity in approximation to the bone. The stitches are cut in twenty-four hours and removed in forty-eight hours.

For the external frontal sinus operation and baby mastoid operation the instrument is used in a similar manner, as the judgment of the operator will naturally decide.

Victor Mueller and Company, of Chicago, are the makers.

CONGENITAL APHAKIA.

BY
WM. F. HARDY, M. D.
ST. LOUIS, MO.

That which follows was occasioned by a letter to Dr. Casey Wood from Dr. J. W. Kimberlin of Kansas City, making inquiry regarding absence of all reference in the *American Encyclopedia of Ophthalmology* to congenital aphakia, either under the heading of aphakia or congenital anomalies. Dr. Wood referred the letter to me for reply.

Mention should, no doubt, be made of this condition, but it is doubtful if much importance should be attached to it.

The paucity of references is due probably to the fact that the absence of a lens is mentioned only incidentally in the description of a much disorganized or malformed eyeball; other points claiming the major interest and attention of the reporter. A search through the Index Medicus from its beginning to the present reveals but two references to congenital aphakia, those of Baker and Toufesco. Nagel's *Jahresbericht* in the last thirty years has also but two references; one by Mohr (*Archiv. f. vergl. Ophthal.*, 1911, I., p. 444), who described a case of congenital aphakia in a pig. This condition existed, together with congenital corneal opacities, anterior synechiae and persistent pupillary membrane. The second reference is to Gratiot's case, in this OPHTHALMIC RECORD, 1905, p. 526. Here was found a congenital corectopia with aphakia. The patient was 30 years of age; always had had poor eyesight; the pupils were displaced downwards. His mother stated that he was born with deformed eyes. Lateral nystagmus was present; both anterior chambers deep and irides tremulous. Floating vitreous opacities, atrophic spots in the choroid, especially marked in the right eye, were also noted. Gratiot suspected a dislocation of the lenses, which is a frequent occurrence in corectopia, but a search did not reveal the presence of the lens either in the neighborhood of its normal location or backwards in the vitreous chamber.

O. D. V.=10/200; O. S. V.=15/200 $\hat{c}$+13.00 S, O. D. V.= 15/200; O. S. V. = 20/200

Gratiot stated that the vitreous changes and atrophic spots in the choroid would indicate a previous intraocular disease, either during uterine life or after birth, at which time the lenses were probably destroyed. The author, therefore, admits a doubt of its being a true cogenital anomaly.

In 1904, Mlle. Toufesco (*Ann. D'Ocul.*, Vol. 132, p. 107) contributed an article on this subject reporting a case and reviewing the ones previously reported to the number of fifteen, Toufesco's case making sixteen. The case reported by W. H. Baker (*N. Y. Med. Journal,* 1887, Vol. XLVI, p. 595), an abstract of which is given below, was not included in Toufesco's report. In only two of the fifteen cases, reviewed and reported as congenital aphakia, did the globe possess nearly normal dimensions. Of the others, there was in one cyclopia; in one cryptophthalmia, and in eleven microphthalmia, three of which were combined with dermoids. The ages of the individuals at the time of observation by the various authors varied from a fœtus (Valenti) to 39 years. Several observers admit the previous existence of a lens and its subsequent degeneration and disappearance. In several of the cases it was acknowledged that the zonule or remains thereof was present.

In referring to or speaking of congenital aphakia, one immediately forms the mental picture of a fairly normal eye, the predominant feature of which is the absence of the lens. The solitary instance conforming to this picture is the case of W. H. Baker, and here there must exist an almost insuperable doubt as to the presence of congenital aphakia. Toufesco mentions two cases, the eyes of which possessed nearly normal dimensions. Her own case was in a congenital syphilitic; the right eye presented a typical coloboma of the iris and a defect in the floor of the globe presented the appearance which hardly justified the comment of Morax that the eye presented the appearance of an emmetropic eye after the extraction of the crystallin. The one sign of aphakia missing, according to Toufesco, was iridodonesis. It is admitted by Toufesco that in a certain number of the cases there had existed the formation of the crystallin lens and that as a result of degeneration there had resulted an absorption of the lens during the fœtal period, i. e., the latter part of intra-uterine life.

The early theory of Manz that the formation of the secondary vesicle is dependent on the invaginating influence of the lenticular ectodermal thickening has been abandoned. This is freely admitted. Experiments and observations have disproved Manz' contention. There exists an independence of action between the invagination of the lens-vesicle and the formation of the secondary ocular vesicle. The latter forms whether the ectodermal thickening (primitive lens) is present or not, and observations have been made in which the embryonal lens formed, and in which no trace of the secondary ocular vesicle was present.

The concluding paragraph of Toufesco's article sums up the situation very succinctly. It is to the effect that it is truly remarkable with what constancy an embryonal lens forms, and that in its course and development degeneration and absorption may take place, but that this occurrence belongs to the fœtal period and not to the embryonal period of life; consequently congenital aphakia is not a development, but a purely pathological condition.

Baker, in reporting his case, spoke of the great rarity of the condition, even so rare that some authorities deny its existence, notably Walton, who stated: "It is doubtful whether this condition has ever been met with except in monstrosities." Baker's case-report is as follows: A boy 16 years of age was brought by his father, saying the sight was "scattered." Outwardly, appearance normal; no accommodative power; barely able to read Snellen No. 10 at six inches. Nothing seen in direct method with the ophthalmoscope, except the red reflex. By the indirect method disc and retinal vessels distinctly seen. Dilatation with atropia and careful search by direct lateral and oblique illumination revealed no vestige of lens or capsule in either eye. In each eye +2.50 D. gave the best vision, enabling him to read Snellen No. 5 at twelve inches.

The refraction of the eyes is not stated. No note of distant vision is made, or of any attempt to bring distance vision to normal with glasses. Further, no note is made of the refraction as measured by the ophthalmoscope. Ordinarily, an aphakic eye is not given a normal reading distance with a +2.50 D. lens, but with a much stronger plus lens. Taking these things into consideration, I would exclude this case as one of congenital aphakia and classify it as one of absence of or paralysis of accommodation.

Previous authors have not accorded a distinct place to aphakia among congenital anomalies, and this action is probably due to the doubt of genuineness in the cases reported, or because of the overshadowing concomitant defects. While congenital aphakia should receive mention under the subject of the lens, it is questionable if enough evidence is at hand to justify classifying it among true congenital anomalies, especially if one adheres rigidly to the interpretation of an anomaly as a non- or maldevelopment, and not a result of distinctly pathological processes.

Since writing the foregoing, there have appeared two reports of congenital aphakia, one by Risley (*Jour. Am. Med. Assn.*, April 17, 1915), mentioned incidentally in describing a case of aniridia, and the other by Sherer of Kansas City (Proceedings of the Mo. State Med. Assn., 1915). No mention is made by Risley of tests for the Sanson-Purkinje images, whereas in Sherer's report such a test was made and the images found absent. In Sherer's case the eye was otherwise apparently normal. In such cases, seen many years after birth, the possibility of a dislocation of the lens with subsequent absorption must be considered.

REPORT OF THREE CASES OF MONOCULAR BLINDNESS DUE TO SINUS OBSTRUCTION WITH RECOVERY OF VISION.

BY

JOHN A. BROPHY, M. D.,

PHILADELPHIA, PA.

Miss D., age 20, single, occupation secretary, consulted me April 4th, 1913, complaining of the loss of vision of the left eye.

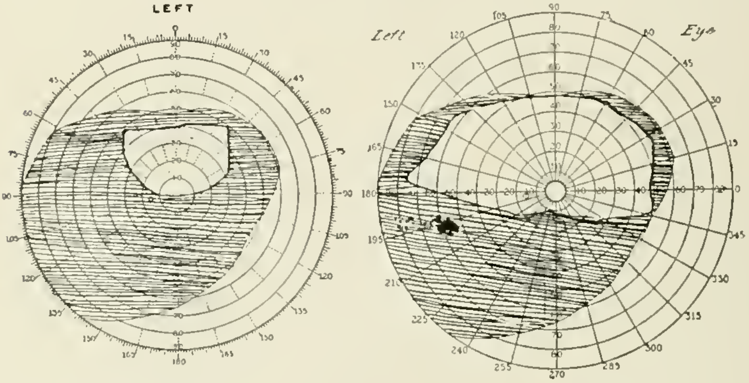
Had diseases of childhood, otherwise has always enjoyed perfect health.

The night before consulting me, when about to retire, discovered she was unable to see with the left eye, being unable to see the gas light. When I asked her what she did when she discovered she was unable to see, she replied that she went to bed and slept all night. Her condition when I saw her was as follows:—Lids, Conj., Cor., Iris were negative, Pupil responded feebly to light, Media were clear, Retina—a slight swelling was present which was evidenced by a white line beginning at the outer disc border about its center, and extending to the periphery, disc showed a slight swelling at the upper inner quarter, the line of demarcation being lost, no vascular change noted. Vis. 20/200, being able to see only the upper half of the letter. Field as below, which shows contraction above and on both sides, the lower half being entirely lost. Color sense intact. The patient was seen in consultation with Dr. L. Webster Fox, and the above conditions concurred in. As the loss of vision was out of all proportion to the changes in the eye ground, we determined that there was some pressure being exerted or toxic condition present. Urine examination neg. Dr. Skillern was invited in the case to make an examination of the sinuses.

He found the ethmoid and sphenoid cells filled with an exudate, a muco-purulent discharge being present. Following the operation, which consisted of removal of the anterior plate of the sphenoid and ethmoid cells, there was a continued improvement of vision after the third day. On the 21st of April, vision equalled 20/40. The swelling of the upper inner quarter was less. No swelling of the retina. On the 27th of April vision equalled 20/30 and on the 30th, 20/20. While the field has improved above, and on both sides, there is still a loss of field below.

Treatment—following the operation she was given six electric light baths; three weeks after the operation, began giving K. I. Sat. Sol., beginning with five drops and increasing up to sixty t.i.d. This was kept up for three weeks and as it made no improvement in the field was discontinued.

Electricity, constant current and high frequency was given for ten days. The patient when last seen several months ago had 20/20 vision and Jaeger 0.50, though field still lost below.



April 15, 1913. CASE 1. July 12, 1913.

Sept. 13th, 1913, Morris B., age 18 years, came to the Medicochirurgical Eye Clinic for treatment of his right eye.

History—One week ago on arising discovered he could not see with his right eye.

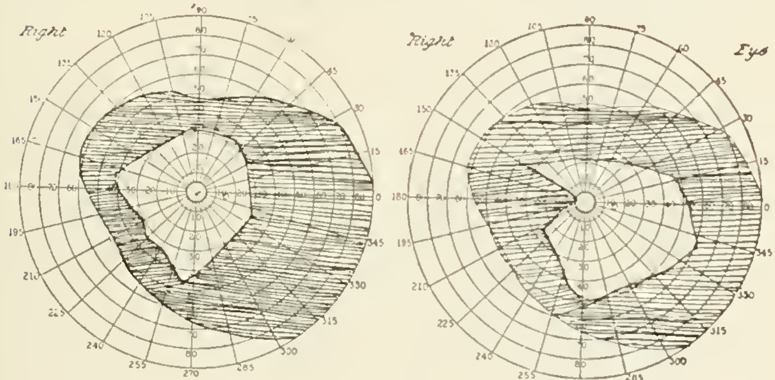
Previous history—Had diseases of childhood, has had no other illness. Boy is of good size and well nourished. Vision right eye—counts fingers at two feet. L. E. 20/30. Condition of R. E. as follows:—Conj. neg., Cor. neg., pupil responds slowly to light; excursion movement good in all directions; media clear; retina hazy, veins more engorged, dark, and tortuous; numerous recent hemorrhages showing throughout the field; disc was swollen about five diopters. The field was as below:—

The case was referred to Dr. Skillern who found an exudate in the ethmoid and sphenoid cells with a muco-purulent discharge. The anterior plate of the sphenoid was removed establishing drainage. Above operation was performed September 25th. October 10th, the optic disc was swollen at the upper, inner, quadrant, elsewhere the line of demarcation being present. Vision 20/40, field shows scotoma.

Treatment—He was given ten treatments of electricity, high frequency and constant current for ten days.

Mixed treatment being given for four weeks when his visits ceased.

Dec. 9th, 1913—Miss D., aged 32, occupation housekeeper, consulted me complaining of marked loss of vision of the left eye, and severe headaches, beginning four months ago. Had diseases of childhood, no other illness.



Sept. 13, 1913. CASE 2. Oct. 10, 1913.

Vision, R. E. 20/30. L. E.—counts fingers at three feet. Condition of left eye as follows:—excursion movement good in all directions; Conj. Neg., Cor. neg.; Pupil slightly contracted responding slowly to light; Media clear; Retina hazy; several recent and old hemorrhages were scattered over the field; the vessels engorged, dark and tortuous; disc swollen about four or five diopters; field as below. Urinary test was neg.

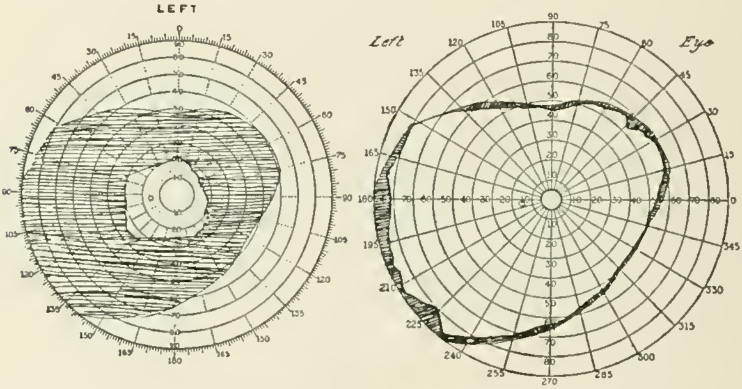
Case was referred to Dr. G. E. Phaler for X-ray examination, who reported finding an exudate in the sphenoid and posterior ethmoidal cells, the middle turbinate being large. While the exudate was present on both sides, it was more marked on the left side.

Following the report of Dr. Phaler, the case was referred to Dr. E. B. Gleason for examination.

Dr. Gleason concurring in the X-ray findings, advised operation which he performed on Dec. 14. The operation consisted of the complete exenteration of the posterior ethmoidal cells and the removal of the anterior plate of the sphenoid.

Following the operation the headache which had been persistent and severe cleared up. The improvement in vision was slow. On April 7th, the vision =20/70. She was placed on m.v. of a saturated solution of K. I. as larger doses disturbed her digestion.

The case was not seen again until March, 1915, she reported as having taken K. I. for three months. The eye had steadily improved. Externally there was no deviation from normal in either eye. Eye ground of right eye, media clear, retina too red, disc negative. Left eye, retina was too red, there were several small brownish patches in and up from disc borders. Disc borders slightly woolly. Vision Field No. 2



Dec. 24, 1914. CASE 3. March 15, 1915.

R. E. = 20/70 — .75 = —50c ax. 180 = 20/20
L. E. = 20/70 —1.00 sph. = 20/20

In reporting the above cases, I desire to call attention to the fact that while cases 1 and 2 were seen immediately or shortly following the loss of vision, and active treatment was at once instituted, case No. 3 was not seen for at least several weeks following the marked diminution of vision, the restoration of which, permits one to give a more hopeful prognosis even in cases of such long standing.

A CASE OF BI-LATERAL SUBCONJUNCTIVAL HEMORRHAGE APPARENTLY DUE TO CENTRIFUGAL FORCE.

BY

A. A. BRADBURNE, F. R. C. S., ENG.,

MANCHESTER, ENGLAND.

The apparently unique causative factor in this case merits record.

A member of an acrobatic troupe, a girl of twenty-one, consulted me in regard to a subconjunctival hemorrhage in her eyes. A deep crimson-lake discoloration surrounded three-quarters of the globe of the right eye, leaving unaffected only the upper nasal segment. A similar but less extensive hemorrhage occupied the outer and lower quadrants of the left eye. The skin of both upper eyelids presented a distinct yellowish tinge, more intense along a line corresponding to the upper border of the tarsal cartilages. The vision and fundi were normal, nor was there anything of a local or constitutional cause to account for the condition. The patient stated she first noticed the local lesion fourteen days previously, and that it appeared, first in the right eye and twenty-four hours later in the left, after her first rehearsal at a turn known amongst the profession as the "tourniquet turn." In the performance of this feat she was suspended, by a belt round the waist, from a strap which a fellow acrobat grasped between her teeth whilst hanging from a trapeze. The patient is then rapidly spun from left to right about three dozen times, around a vertical axis, which motion obviously drives the blood to her extremities and is sufficient to account for the occurrence of the hemorrhage and its appearance first in the right eye and later in the left. If this feat can produce, as seems likely, a hemorrhage into the orbits, it is just as likely to produce in predisposed indivuals cerebral hemorrhage. The liability to such results raises an interesting query regarding the responsibility for compensation by those who employ these persons and make them attempt such ridiculous feats.

REPORTS OF SOCIETIES

WILLS HOSPITAL OPHTHALMIC SOCIETY.

WILLIAM ZENTMAYER, M. D., CHAIRMAN.

JANUARY 9, 1915.

(Continued)

That the lipomatous mass in the orbit, he remarked, was not a pathologic growth, but an anomaly, is suggested by the following facts: That the condition was probably congenital; that the girl, now aged seventeen, had been operated upon for hare-lip; and that there had apparently been a cleft in the cheek on both sides, which had also been closed by operation. These anomalies of development led to the inquiry as to the probability of faulty development in the anterior segment of the skull—possibly in the orbital walls. There were no colobomata in the iris, choroid, or optic nerve, in either eye, the fundus in each being quite normal in appearance. Dr. Risley suggested that X-ray study might furnish additional evidence, and hoped to present the results of such study at a subsequent meeting of the society.

An Ethmoid Mucocele Involving the Orbit Treated with the Violet Ray.

Dr. S. M. D. Marshall presented the following case: On April 2, 1914, William S., a negro, aged thirty-eight years, a farmer by occupation, married, with no children, and giving a negative venereal history, presented himself for treatment. He complained of protrusion of the left eye; neuralgic pain on the left side of the head, especially in the region of the left eye; and double vision. He had first noticed the trouble about six months before, and it had grown steadily worse. Examination showed a marked proptosis of the left eye, and partial paralysis of the upper lid, as the result of which there was considerable conjunctival injection and chemosis. The action of all the external muscles was almost entirely gone, especially the superior rectus. Pain and tactile sense were very much diminished over the entire left side of the head and face, especially in the region of the left orbit. The cornea was clear, the iris apparently normal, the lens and vitreous clear, and the fundus apparently normal, except for slight pallor of the temporal half of the disc. The vision was 6/6 in the right eye; in the left 6/9 pt. Diplopia was evident on moving an object (twenty inches from the eyes) three inches in any direction. The field of vision in the right eye was apparently normal for form, but that of the left showed a rather marked contraction on the nasal side. The blind spot was apparently normal, and no scotoma was found.

Examination of the nose showed that the upper portion of the nasal cavity on the left side was entirely occluded by a swollen middle turbinate. The patient gave a history of having had a naso-pharyngeal catarrh for several years. A tentative diagnosis of ethmoidal mucocele involving the orbit was made. The nose was treated locally with cocaine, adrenalin and albolene spray. Internally, sixty grains of aspirin was given him daily, to control the neuralgic pains. He was instructed to use hot fomentations three times a day, together with a boric acid wash.

Vision remained the same on April 6th; other symptoms were unchanged, except the neuralgia, which apparently had lessened materially. On April 11th it was noted that for the last few days there had been a slight mucopurulent discharge from the nose. The eye condition and the anesthesia remained the same. On April 22nd, it was suggested that the violet ray generated by our X-ray machine be tried through vacuum tubes in the nose, and directly over the eye. Three treatments were given, all other medication being stopped. The vision became normal in each eye, the proptosis much less marked, and movements of the external muscles greatly increased. The patient felt very much better, but said that he had a dragging pain on moving the eye quickly. The neuralgia had almost disappeared. By June 6th there was only slight proptosis. Consequently, the ocular movements had greatly increased. Sensation in the left side of the head and face had returned, except for a small area of anesthesia on the lower lid, and one on the upper lip. Vision in the right eye was 6/5 pt.; in the left, the same. The field of vision was apparently normal, but the temporarl half of the disc remained pale.

Two months later, examination showed absolutely none of the symptoms of which he had complained on his first visit. The left eye seemed to be less prominent that the right, which was probably due to the contraction of the scar tissue in the orbit. The patient was discharged cured.

Dr. Marshall called attention to the fact that during the whole time that the patient was under observation he had never lost a day's work. This, considering the time of year and the man's occupation, is rather remarkable. Dr. Marshall further stated that at the time the electrical treatment was started all medication except a mild nasal spray of camphor, menthol and albolene, was stopped. He was skeptical as to the outcome at that time, and could see nothing ahead but a radical operation, which would have meant to the patient the loss of at least four to eight weeks, not to mention the possibility of a more serious outcome. The speaker thought that the real trouble was an ethmoidal mucocele involving the orbit, and that, by increasing the drainage through the nose, and so stimulating the circulation in the tissues of the orbit, the mucocele was in part discharged, and in part absorbed. He believed that the case had been cured by the violet ray, and recommended that in similar cases this should be used, a fair trial being given it before considering a radical operation.

DISCUSSION.

Dr. Posey said that he had had no experience with X- or other rays in the treatment of the class of cases referred to. From the history, he thought that Dr. Marshall's case was one of orbital cellulitis, due to an acute inflammation of the sinus, rather than to mucocele. There was no evidence that the sinus had been blocked up, he said. Indeed, there was a nasal discharge. He referred to a similar case shown by Dr. Fisher before the society in 1913, and said that in that case the orbital cellulitis and the proptosis, which had been extreme, subsided under ordinary nasal treatment.

J. Milton Griscom, M. D.
Secretary.

CHICAGO OPHTHALMOLOGICAL SOCIETY.

DR. RICHARD J. TIVNEN, PRESIDENT.

February 15, 1915.

New Speculum for Operations on the Lachrymal Sac.

Dr. Clark W. Hawley stated that the instrument was not absolutely new, but an improvement. In using the old specula he found himself very much cramped for room and also that the unnecessary parts of the same were in the way while operating, so he conceived the form of the instrument which he presented, saying it was very much simplified, and on account of the curvature given to its blades, it gave an abundance of room in which to work.

Dr. D. T. Vail, Cincinnati, exhibited a speculum he had designed, which is suitable for the Axenfeld operation where the incision is made boldly down to the bone, and with periosteotome stripping off the periosteum toward the lachrymal fossa. The instrument has been in use five years, during which time he has employed it a number of times and finds it indispensable. With this speculum one can not only see the depths of the wound and lachrymal groove, but it controls hemorrhage.

Aqueoplasty, or the Zorab Operation for Glaucoma.

Dr. Casey A. Wood. (See original article in the OPHTHALMIC RECORD for April, 1915.)

DISCUSSION.

Dr. Edward Jackson, Denver, Colo., stated that a slight modification of the operation under discussion was also proposed by Stephen Mayou, who suggested putting a knot on his thread to keep it from slipping into the anterior chamber, and before that, as he recalled, something of the kind had been done by Rollet for corneal suppuration. He supplemented that by introducing a thread into the anterior chamber and did the same operation as a temporary measure for acute glaucoma, but with all these different propositions the operation seems to the speaker to be very much of an experiment, and one that he would not care to repeat. The greatest difficulty with all attempts to leave a permanent opening in the sclera has been a tendency in some cases for it to close. The first case he operated on (Elliot operation) he saw a few months thereafter, and the result was satisfactory. In the other cases there seemed to be a very strong tendency for the scleral opening to close or to become so overloaded with new-formed connective tissue that it no longer served the purpose of drainage; it would be flooded in that position and there would be a tendency to aggravate the irritation, increase the amount of new tissue thrown out, and in that way lessen the permanence of the result.

Dr. C. B. Welton, Peoria, asked Dr. Wood whether in any of the cases he had observed or had seen reported the piece of silk remained in position, or whether in any case it became free in the anterior chamber. He also asked in regard to the method of anesthesia.

Dr. Lee W. Deane, Iowa City, stated that some eighteen years ago Fuchs produced dilatation of the pupil to test for chronic glaucoma, and in the last eighteen months he had had one case in which he suspected glaucoma, dilated the pupil with euphthalmin and homatropin without any increase of tension, and several months later operated for acute glaucoma.

Dr. Derrick T. Vail spoke of euphthalmin and stated he saw it used fifteen years ago by Herman Knapp of New York. He did not know then why Knapp suspected glaucoma, but after the use of euphthalmin the disease was evident. Since then the speaker had used this mydriatic as a diagnostic measure in ophthalmic disease. (See original article in OPHTHALMIC RECORD for April, 1915.)

Dr. H. W. Woodruff, Joliet, pointed out that iridectomies in cases of glaucoma were sometimes said to be more efficacious if some of the iris was left in the wound. In fact, the iris was sometimes drawn up and left in the wound purposely to promote drainage. It would seem to him that if that operation was justifiable, certainly placing a thread in the anterior chamber was even more so.

Dr. Harry S. Gradle stated that Alt two years ago showed sections of eyes that were operated by his method and the Elliot trephining method. The operation was successful where the eye was removed at autopsy, and unsuccessful where the eye was removed with increased tension. He proved conclusively that the beneficial effects of the trephining operation were due to the ingrowth of pigment epithelium into the lips of the wound; that the fistula was kept open by the pigment epithelium and not by the effects of the aqueous alone, consequently this fistula was always a menace to the patient. As long as there was filtration of the aqueous humor the patient was exposed to the danger of a low infection. Meller's statistics, taken from 360 cases, showed 2 per cent infections occurring within two years after operation. Perhaps the percentage would increase as the number of years during which the operation would be done increased. He did not know whether the objection would hold in the Zorab operation or not, but the objection raised to iridectomy was a blotting out of the visual field for some unknown reason. The same thing happened after trephining. He had had this happen in three cases. The filtration operation should be attempted first.

Dr. Wood, in closing, said he had never seen the stitch move from its primary position. Patients were liable to have infection following both the Lagrange and Alt operations. Euphthalmin was not original with him. The ophthalmologist should not fail to use such a valuable means of diagnosis in doubtful cases.

Dr. William H. Wilder said the profession was indebted to Dr. Edward Jackson for the method of determining whether or not glaucoma would develop in doubtful cases. He himself had used the method for many years. There were some eyes, however, that would become glaucomatous on the slightest provocation, while with other eyes the ophthalmologist could do what he pleased with them and they would never become glaucomatous.

Dr. William E. Gamble presented a case of coloboma of the lens simply on account of its rarity.

Dr. George F. Suker called attention to three cases which the members saw last year. After a prolonged study of the case of a young man upon whom he operated, he had come to the final conclusion it was a diploic dermoid.

The other two were pituitary cases, one in a young girl. and the other in a woman of thirty-five. Both were still alive. One of them had improved very much. In the case of the young girl he desired suggestion and advice in regard to getting rid of a cerebral hernia which the patient now has. In the woman of thirty-five the X-ray plates showed a decided increase in the pituitary body and the sella turcica. In the right eye vision was 20/20 in the direct axial line. She had bitemporal hemaniopsia. She was operated on the 16th of January of this year. Between the 16th of January and the 8th of February he found the field had increased in the right eye, but she had only light perception. There was choked disc of three and one-half to four millimeters in the right eye. The left eye was atrophic, and diagnosis was made by another practitioner of optic neuritis.

The young girl had never menstruated and her genital organs were of the infantile type. The woman, thirty-five years of age, menstruated at the age of twelve, continued to do so for six years thereafter, then menstruation suddenly ceased, and she had not menstruated since. The patient had the characteristic bitemporal headache and the dizziness which accompanied it.

After detailing the present condition of vision, Dr. Suker stated that as soon as he got permission he was going to do a sub-temporal decompression, because the X-ray plates showed such an extensive involvement of the pituitary body that the condition could not be dealt with by the trans-sphenoidal method.

In the case of the young girl, to get rid of the cerebral hernia, he detailed an operation which he contemplated doing.

If ophthalmologists were a little more particular in differentiating between choked discs and simple optic neuritis, they would find more cases of intracranial pressure, pituitary or otherwise, than they do at the present time.

DISCUSSION.

Dr. Derrick T. Vail, Cincinnati, said the benefit which had followed in one of Dr. Suker's cases was due solely and entirely to the decompression, taking off cerebral pressure by having a large opening made in the skull; but the real disease he still believed, from the symptoms presented was in the pituitary body, and he did not know whether sub-temporal decompression, which Dr. Suker contemplated doing, would accomplish much or not.

Dr. Lee W. Dean, Iowa City, stated that about six or eight weeks ago a patient came under his observation with pituitary hypertrophy. The X-ray showed a shadow indicative of a large tumor, with atrophy of the optic nerve. The patient was barely able to see to move around. The pressure seemed to be local. There was no evidence of general pressure. He followed Harvey Cushing's advice and did pituitary decompression through the sphenoid. When he incised the dura the tumor bulged out, and it extended down so that it could be seen in the nose and, strange as it might seem, by very careful observation it was shown this man's vision had returned to a certain extent. The diagnosis proved to be sarcoma, and the man at present, eight weeks after the operation, was practically comatose.

Dr. J. B. Loring stated in reference to choked disc that the case he expected to present illustrated what Dr. Suker was endeavoring to impress upon the members. The patient was referred to an ophthalmologist on account of headaches, for refraction. The patient was refracted. She had compound myopic astigmatism and was informed she should be refracted within a year. The patient this time went to one of his co-workers and a re-refraction was made, and without studying the fundus, he took it for granted this had been done previously. On examining the fundus, Dr. Loring found she had all the characteristics of a typical choked disc, in contradistinction to optic neuritis, a case of which he had hoped to present. Vision had not been impaired within the past year, but the field was contracted to a considerable degree. Central vision remained acute.

The case had symptoms from the neurological side for which he was indebted to Dr. Mettler. There was a reduction of power in the arm and left leg; she had increased patellar tendon reflex on that side, and if anything, it was diminished on the other side. The pain was on the right side of the head.

Intranasal Drainage of the Lachrymal Sac; A Simple Method. Dr. J. A. Pratt, Aurora, Ill. (See original article OPHTHALMIC RECORD, April, 1915.)

DISCUSSION.

Dr. Frank Brawley thought there might be a distinct objection to this operation on the ground of traumatism, externally to the lachrymal sac, but perhaps Dr. Pratt's method of suturing might overcome that, and yet it added considerable difficulty to the operation. It undoubtedly has its advantages in cases where anatomical difficulties exist, such as deviated septum, high up in the operative field, but even in those cases he thought the bur which he had mentioned at a previous meeting could be used very readily. Whenever one is dealing with dacryocystitis the anterior ethmoid cells are under suspicion. Where the operation is intranasal, one has an opportunity to drain the anterior ethmoid cells, and it will prove a serious complication unless they are drained, and that preferably at the time of operation.

The case he presented to a previous meeting of the society was operated on three and a half months ago, and was again shown tonight, the drainage was going on uninterruptedly. The operation described by Dr. Pratt he thinks will be of advantage where the canaliculi have already been slit, but he feels it is incorrect to disturb the lachrymal apparatus at all, except where a probe is introduced into the lower canaliculus by strong dilatation to act as a guide in the intranasal operation, thus maintaining a functionating lachrymal apparatus.

Dr. J. Sheldon Clark of Freeport spoke of the West operation and stated that he had described its technic at a previous meeting. What one wishes to get is not only drainage of the sac, but a functionating tear apparatus left. Any method that would do this and drain the sac into the nose was a good one. The operation suggested by Dr. Pratt could be done in the presence of phlegmon, but one would hardly care to undertake the external operation in such a case. In all these cases a permanent result is desired, and time would tell which is the better method for maintaining a permanent fistula into the nose. Unless the septum is removed, he thinks synechiae would follow the operation and defeat the aim of securing permanent drainage.

The West operation he had done in seven instances in association with Dr. Pratt.

Dr. Clark then exhibited some drawings showing the steps of the operation of West and also some instruments that are used in doing the operation, and likewise detailed the cases on which he had done the West operation with satisfactory results. The intranasal drainage of the tear sac is the right way to establish surgical drainage of the lachrymal sac.

Dr. Pratt, in closing, said the opening from the sac to the nose is easily made and can be enlarged to any desirable size. On the size of the bony opening depends whether it will close or not, the opening should have a vertical measurement of 8 mm. and a horizontal of 6 mm. The suturing of the opening in the sac places the lachrymal apparatus in its original position. The majority of the cases we see now have an opening in the sac, so the condition is not exaggerated, and we have the benefit of drainage.

The forming of synechiae is less apt to occur in this operation than the West, as the septum is protected, and so precludes this condition, while in the West the irritation of the instruments in the nose will abrade the mucous surface.

Paul Guilford,
Secretary.

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

Annual Congress.

The annual Congress of the Society was held on Thursday, Friday, and Saturday, April 22nd to 24th, under the presidency of Mr. F. Richardson Cross, of Bristol. The discussions were held at the headquarters of the Royal Society of Medicine, and the clinical meeting at the Royal London Ophthalmic Hospital, City Road. There were two set discussions, and a large number of other contributions.

Bony Tumours of the Orbit.

Mr. Charles Wray (Croydon) contributed a paper on the diagnosis and treatment of bony tumours of the orbit. With regard to their removal, he contended that the figures of Herschfeld placed the subject in its true perspective. They showed that the mortality in cases of sinus growths—frontal, ethmoidal and sphenoidal—were 48.2, 80, and 100% respectively; whilst the post-operative mortality was 13.6, 12.7, and 33%. The two main methods of diagnosis were by palpation, and the use of Röntgen rays. As examination by fingers was too limited, he advised the use of a thin flexible spatula 10mm. wide and 2mm. thick at the ends. This, pressed on the skin under the supraorbital notch, passed 15mm. under the lid and via the fornix 33mm., i. e., within 12 or 13mm. of the sphenoidal fissure. The measurements at the lower orbital margin were 12 and 16mm. respectively; while at the inner and outer canthus the distance reached was 15 and 21, and 11 and 22mm.; and as the usual distance from the margin of the orbit to the rectal spine was 45mm. it was possible thus to investigate half the outer wall of the orbit. In the living subject it was desirable to administer morphia an hour, and deep injections of novocaine ten minutes before beginning the examination. As to the operation, he laid stress on the importance of dissecting up the superjacent membrane if present, and the periosteum, so as to shut off, as efliciently as possible, the field of operation from the contents of the orbit. Having tested the hardness of the growth, an attempt should be made to test the strength of the attachment to the bone, as slight leverage might snap the pedicle. If this did not occur, and the tumour was cancellous, it should be removed piecemeal, so as to discover its relation to the orbital wall. If originating from a subjacent sinus, and especially if hour-glass shaped, the bone should be cut away so as to allow of easy removal in the safest direction. Two important landmarks were the inner canthus (over the anterior extremity of the middle turbinated) and the anterior ethmoidal foramen (giving the level of the cribriform plate). Frontal sinus cases were the most frequent, and usually presented at the upper and inner part of the orbit. No operation should be undertaken in the presence of material alteration in the roof of the orbit as revealed by X-rays. Ivory exostoses could not be removed piecemeal. As in the cancellous variety, gentle leverage was in order, and in the event of failure, sufficient of the orbital wall should be cut away to permit of removal in the safest direction. A clue to the size and location of the growth was obtained by radiography and the use of a strong needle.

Dacryocystotomy.

Mr. W. D. Harmer read a paper on the intranasal treatment of dacryocystitis. As nasal inflammations and abnormalities rarely cause dacryocystitis, treatment of such conditions is generally disappointing. Intranasal operations on the tear sac or duct became popular in 1912, after the operations of West, Polyak, and Yankauer. A modified West operation has been preferred. Of 14 cases treated, six have been cured, three improved, four not improved and not traced. Operations are easy to perform, and can be repeated if necessary. Dacryocystotomy is probably the best treatment for dacryocystitis.

Eye Injuries in the War.

Capt. A. W. Ormond read a paper on Injuries to the Eye in Warfare. He recounted three cases of traumatic amblyopia following the explosion of shells. The first was of a soldier who was in the retreat from Mons. He recovered entirely after complete rest and "feeding up." A second case was associated with an error of refraction which had led to the idea that recovery had not taken place; while the third had not yet regained his former sight, though wounded more than three months ago. It was pointed out how difficult these cases are to diagnose, and how important it is to take the psychology of the men into consideration. He described the frequency of "explosion injuries" peculiar to the war, the result of hand-grenades, shrapnel, or high velocity shells; numerous cases had occurred in which, as the result of a general explosion, small fragments of metal or dirt had been forced through the tunics of the eye; these had sometimes been overlooked, and later on, the man having complained of pain and inflammation, iritis had been correctly diagnosed, but the possibility of a foreign body being in the eye had not been realized, and sympathetic trouble might have occurred. He related two cases in which the speedy removal of the eye prevented sympathetic trouble supervening. With regard to the vexed question of removing an eye containing a foreign body, he recommended that no general dogmatic statement should be made on this debatable point, as each case must be separately considered. He deprecated relying solely on the findings of X-ray examination, because in several cases the foreign body was not discovered until a second or third radiogram had been taken, and sometimes not even then. The history, the nature of the inflammation, if any, and the amount of vision, should be taken into consideration when making a decision. Short notes were given of 28 blinded soldiers, most of whom were now at St. Dunstan's, Regents Park. Thirteen of them have no perception of light at all; and the sight of those with vision ranged from mere perception of light to ability to count fingers in one part of their field. Eighteen were the victims of bullet wounds, which, for the most part, traversed the front part of the head from side to side; 4 were wounded by shrapnel, one by a hand-grenade, and the others by explosion, the exact nature of which the men did not know. One, however, was due to a bullet hitting the magazine of the man's own rifle, which exploded in his face. The author remarked on the extraordinary malignancy of these bullet wounds, several of the men when looked at appearing absolutely fit, often with both eyes intact, the scars of entrance and exit wounds being almost impossible to locate. An account was also given of a serious corneal ulceration due to the gonococcus, caused, probably, by infection from a towel which had been in general requisition. Partial recovery ensued.

Detachment of Retina.

Mr. Cyril H. Walker brought forward a paper describing cure of spontaneous detachment of retina by multiple scleral puncture. The patient, aet. 39, had sudden loss of sight in part of the right field in September, 1901. Two days after the occurrence there was a large detachment above, the summit of which was estimated as 12 D. He had 4.5 of myopia. He was ordered complete rest in bed for a week, and then was allowed up for an hour a day. The detachment had now swung round to the lower part of the eye, with corresponding change in the field; vision had improved. A further fortnight of partial rest showed further improvement, and he was allowed out; but the sight rapidly got worse and the detachment increased. Improvement followed more rest in bed, but it was only temporary; in December the vision had fallen to 6/60. He was ordered to bed again, and five scleral punctures with a discission needle were made 10mm. from the lower border of the cornea. The retina was pierced at each puncture, and the needle was rotated 90 deg. after the last puncture, to let out some of the subretinal fluid under the conjunctiva. On December 21st the sight was immensely improved, and he resumed full work on March 4th, 1902, with vision 6/6 with glasses, and a normal field. The condition had been maintained ever since, and the only sign of detachment was the presence of a little pigment below in the choroid.

Angiosarcoma of Retina.

Mr. Cyril Walker also read a communication on angiosarcoma of retina. The patient, aet. 4 years, was seen on Nov. 11th, 1914. Eight months before there was said to have been a film over the right eye; no pain or redness. It disappeared in about six weeks. In June and September there was some pain in the eye, but the boy had regularly attended school to the end of October. The right eye was seen to be the seat of a brownish-yellow hypopyon. There was no ophthalmoscopic reflex; the tension was normal, and the pupil dilated well with atropine. There was doubtful perception of light. The left eye was normal, and the patient's general condition good. Ten days later the eye became red and tender, and there was some continuous pain; the tension was *plus* 1. The contents of the anterior chamber were evacuated, and Professor Walker Hall reported that the material was probably sarcomatous. The eye was accordingly excised, and submitted to the same authority. Early in December some ¾ inch of the stump of the optic nerve was removed, with a mass of tissues surrounding it. Pathological examination showed that recurrence had commenced in the stump of the nerve and the surrounding tissues, but there was a small margin of healthy tissue. Dr. Osborne, of Ilfracombe, reported to him that recurrence took place within a fortnight of the second operation, and that the mass had attained the size of a cocoanut. The boy's mental condition was not affected, and there had been no metastasis. The specimen showed that the ciliary region was not invaded.

Trephining in Retinitis Pigmentosa.

Mr. M. S. Mayou read a paper on a case of retinitis pigmentosa treated by trephining, the improvement following which had been maintained for 4½ months, in the hope that some light might be thrown on the etiology of a little-understood disease. In this condition anything which improved the retinal circulation would temporarily benefit vision—such as the administration of amyl nitrate or subconjunctival injection, paracentesis of anterior chamber. Doyne had shown that extraction of the lens was followed by immense improvement in vision due, it was considered, to the fact that the patient was always in a condition of semi-daylight, owing to the cataract, so that the retina did not receive sufficient stimulation. Mr. Mayou, while not denying this, thought that the lowering of the intraocular tension, with the consequent flushing of retinal vessels, and the filtration of fluid through the scar, might be an additional factor, possibly the most important one, in the good result. He, the author, thought trephining would result in the retinal vessels being flushed with blood, and that the subsequent leakage might lead to a more rapid excretion of fluid from the eye, and drain away any toxic products which might be causing local vascular sclerosis. The patient was a female, aet. 17, who, for two years, had complained of night-blindness. Grandfather, father, one paternal aunt and one brother were all affected with the same disease. The four sisters of the patient were not night-blind. She showed marked pigmentation of the periphery, the discs being slightly grey in color, and the vessels of practically normal size. The lenses were clear. When first examined, the fields were contracted to a 10 deg. circle on both sides. On November 13th, last, and again on December 1st, paracentesis of the left eye was performed, and on each occasion there was distinct improvement in the fields. On Dec. 8th, trephining was done under general anaesthesia,. On removing the disc of sclera there was a very free prolapse of iris, and it was slightly caught in the wound; recovery was otherwise uneventful. A week later the field on this side had practically reverted to normal, and she could walk about freely in a darkened room. Improvement was maintained to the present date. On covering the unoperated eye she could see well at night time; but if both eyes were open she was still somewhat night-blind. He could not advance any explanation of this. The improvement could not be expected to last very long; but it might continue for a length of time which justified the operation in selected cases.

Papilloma of Canaliculus.

Mr. F. A. Juler read notes of a case of papilloma removed from the upper canaliculus. The tumour came away after slitting the canaliculus, quite easily; there was no apparent pedicle. It measured 10mm. by 4.5mm.; and in structure was a papilloma with stratified epithelium.

Lymphangioma of the Orbit.

Dr. George Mackay (Edinburgh) read a short note on a case of lymphangioma of the orbit with hemorrhages, seen first in 1906, in a child who was then 15 months old. Paracentesis, and, later, excision so far as practicable, having failed to eradicate the growth from the apex of the orbit, X-ray treatment, given by Dr. Hope Fowler, had been employed, and with much benefit. Owing to the irregularity in the patient's attendances, proptosis had been allowed to recur, at intervals of one to three years, but had always yielded to further X-ray applications. The cure now appeared to be complete, and vision and movements were unimpaired.

Choroidal Structure of Fruit-Bat.

Mr. G. Coats demonstrated a peculiarity of structure in the choroid of the fruit-bat, which was first observed by Lindsay Johnson. Instead of being smooth, the surface is covered with innumerable conical prominences, each containing a central vessel, which projects from the apex in the form of a long capillary loop. The outer surface of the retina has a similar serrated sectional outline. The condition is not found in any of the insectivorous bats, whose eyes in other respects also are inferior in development. It had been suggested that the structure was a device for the nourishment of the retina, in which central retinal vessels are absent in the bat. But many animals (e. g., the elephant and rhinoceros) which have a much thicker and more extensive retina have also no, or only rudimentary, central vessels; yet their retinae obtain sufficient nourishment from a flat choroid without the sacrifice of form vision which the arrangement in the fruit-bat necessarily entails. According to another hypothesis the structure is an accommodative mechanism, images of distant objects falling on the most anterior plane of the serrations, of near the most posterior. Evidence was adduced to show that the range of accommodation so obtained could not be great, and that, inasmuch as the formation of a clear image was impossible, it could not be very useful. The most probable explanation was that the condition was a device to enable the eye to make the best possible use of low illuminations. Evidently, the serrated contour of the retina must greatly increase the superficies of the sensitive film, and augment the number of visual elements concentrated within a given area. In other respects also (its relatively large size, and the structure of the retina) the eye of the fruit-bat is characteristically adapted to a nocturnal habit.

Mr. Coats also demonstrated an encysted nematode parasite in the eyelid of the mouse. Professor A. E. Shipley, F. R. S., considered it to be Ollulanus trienspis, the adult form of which occurs in the alimentary canal of the cat.

The author, also, in conjunction with Lieut.-Col. W. G. Pridmore, demonstrated a filaria from the anterior chamber of the horse, probably an immature male of Filaria equina.

Ophthalmic Injuries in Warfare.

Mr. Walter H. H. Jessop, in opening the discussion on this subject, dealt chiefly with the cases he had seen from the present war on land, at St. Bartholomew's and No. 1 Base hospitals. He said that the steel or cupro-nickel mantle of the bullet was often chipped, and a fragment might perforate the cornea, or embed itself in its substance. The initial high velocity of the bullet might be lost by ricocheting from a stone, and he had found that wounds so produced were more serious than direct ones. As most of the fighting was in trenches, there was a greater proportion than usual of head and face injuries, as they were the parts most exposed to the enemy. There had been a few instances of spent bullets entering the orbit and remaining there without bursting the eyeball; they were probably ricochet. Such cases often showed intraocular hemorrhages, choroido-retinal changes, and detachment of retina, generally complete. The most distressing ocular injuries, usually caused by enfilading fire, were those in which the bullet passed transversely through both orbits. There must already have been at least fifty such cases. If it was found that a wound had been made in the orbital roof, the brain substance would fill it up; and as sepsis could not be prevented, it was better to leave well alone. When the orbit and eyeball were much damaged, it was better to foment the wound and keep it as clean as possible with sodium chloride solution, delaying removal of the eyeball until the conditions were less inflamed, always having in mind the risk of sympathetic ophthalmitis if the other eye were a good one. In the case of both eyes being destroyed, it was better to wait until the danger of sepsis was over, or it was much reduced, before removing the destroyed eyeballs, owing to the fear of meningitis. He described an operation devised by Mr. W. T. Lister to avoid the opening of the nerve sheath. Eyelid injuries he found to be very common, and almost always accompanied by injuries of the eyeball. Usually the lids became very odematous, hence sutures should not be inserted into them. Conjunctivitis did not seem to have been prevalent in this war. In the Franco-German war, 55%

of cases of eyeball injury developed sympathetic ophthalmitis; in the American Civil war the percentage was 16.14. In the present war he had not seen or heard of a single case of the kind, which he attributed to the great care exercised in diagnosis and treatment, and especially the early enucleation of a ruptured globe. He had only seen one case of bullet wound implicating ocular nerves, and that he described; it was a richochet bullet. The bullet and shrapnel wounds of the skull vault were generally depressed, and there was a great frequency of papilloedema in such cases; the appearances were those due to pressure. Papilloedema was probably present in all cases of vault injuries, with increased intra-cranial pressure; it was not usually seen when this pressure remained normal. Fractures of the skull near the occipital lobes were often accompanied by hemianopsia. At the beginning of the war there were many cases of complete blindness following severe explosions; but sight returned at different periods up to a week. The condition in these cases was always bilateral. Some cases were deaf, in rarer instances the patient was dumb. Three of the men had extreme blepharospasm, so that they could not open their eyes for days. The initial shock in these cases was loss of consciousness, which, passing off, left loss of sight, deafness, or even loss of speech, all temporary.

Mr. W. T. Lister said the outstanding features of the ophthalmic injuries in the present war were their severity and the impossibility, in most cases, of employing conservative surgery. He grouped the cases into the following classes: Contusions, wounds, cases with foreign body in the eye, functional cases, and head cases. These he considered seriatim. In concussion cases, if the bullet did not go through the orbit the fundus showed no concussion changes. Ruptures of the choroid were fairly common, and they might be star-like or arranged in definite groups. The rest of the retina showed some pallor due to *commotio retinae.* Penetration of the eye with small foreign bodies was a very unsatisfactory group of cases to deal with. Many of the particles did not give a sensible X-ray shadow, and even if they did, many of the fragments were non-magnetic. Two factors increased the poor outlook in operation: (1) the frequent presence of more foreign bodies than had been diagnosed; (2) the friability of the foreign bodies, so that they broke off when caught in the forceps. It was difficult to know what to do in the case of a foreign body in the eye when the sight remained useful. He believed that even if an eye contained a foreign body, if there were no prolapse or entanglement of the uvea or lense capsule, the risk of sympathetic ophthalmitis was *nil.* Though the eye would probably degenerate, useful vision might persist for a considerable time. If signs of irritation did not abate, he would remove the eye. Foreign bodies in the cornea were often very troublesome to remove. When the foreign body was deeply embedded, he found a Beer's knife most useful. Mr. Lister went on to discuss in some detail functional cases, and quoted some striking instances. In head injuries, papilloedema occurred in slightly over 50% of the cases, but two-thirds of these had merely blurring or slight swelling. The greatest swelling occurred in association with cerebellar abscess. He did not attach much diagnostic importance to hemorrhages or exudations; and the presence of papilloedema did not point to the immediate necessity of operation; it was increasing swelling which was the significant factor. He regarded cases of occipital injury as of very great interest, as a study of them might cast important light on the cortical representation of the fundus. The facts arrived at by Dr. Gordon Holmes and himself, from the examination of a number of cases, were (1) when the lesion occurred over the occipital cortex of only one side, the result was either hemianopsia, or homonymous quadrantic defect on the opposite side; (2) when the bullet passed through both occipital lobes, there was at first complete blindness, but in several cases this gradually cleared centripetally after an interval varying from hours to days, leaving a central scotoma. He regretted his observations were not fuller, but cases were after a short time sent over to England.

The discussion was continued by Messrs. E. Treacher Collins, P. H. Adams, G. Pooley, Cargill, Mackay (Edinburgh) Cruise, F. J. Thomas, A. L. Whitehead (Leeds), Priestley Smith (Birmingham), Townsend, Colonel Elliot, Mr. Gray Clegg, Professor Landolt, and the President.

On Detachment of the Retina.

A debate on this subject was introduced by Mr. M. S. Mayou. He said that detachment of retina was only a sequel to other intra-ocular diseases. He dealt in the first place with its associated physical phenomena, and, secondly, with congenital detachment especially. The condition was really one of separation of the retina between the pigment-cell layer and the rods and cones, i. e., where the two layers of the optic cup come together during foetal life, and which was subsequently represented as a lymph space. Detachment of retina was essentially a cystic condition. The author was strongly in agreement with von Graefe's view that it was exudative in origin, and that detachment could not occur without fluid being effused from the choroidal vessels, the fluid having a higher specific gravity than that in the vitreous chamber. It was probable that there was no true tissue adhesion between the rods and cones and pigment-cell layer, or at least so slight that it was not a factor in keeping the retina in its place. This potential space was filled with lymph, permitting the rapid tissue change associated with the bleaching and regeneration of the visual purple. In the normal eye, distension of the vitreous in its hyaloid was by fluid derived from the ciliary process; the vitreous exerted a pressure by having a higher density than the lymph in the inter-retinal space. In many diseases the vitreous became more fluid than normal, or the framework of the vitreous shrank with the hyaloid, and there was free fluid in the space between hyaloid and retina. With degeneration of the vitreous, the densities of the fluids on the two sides of the membrane closely approximated, and a slightly increased density of that in the inter-retinal space would produce detachment. For the investigation of such cases it was necessary to use a fixing agent which coagulated but did not destroy albumen; and boiling was the best. It was very difficult to ascertain the underlying cause of shrinkage of vitreous. Detachment of retina occurred when a larger pressure was exerted outside than inside the membrane. Detachment could occur with a normal vitreous, as when the choroid was the seat of a growth. Owing to the effusion of albuminous fluid, the retina was pushed inwards, and some of the fluid was squeezed out of the connective tissue meshes, passing forward into the anterior chamber. Glaucoma might supervene before the complete shrinkage of the vitreous. Detached retina associated with growth in the choroid was exudative in character, though it might cause secondary changes in the vitreous. He detailed some cases in children who had come under his care. In myopia, a fluid exuded into the inter-retinal space of low density would cause detachment, possibly associated with venous obstruction. Inflammatory exudation from the choroid might cause detachment if of serous rather than plastic nature. Injuries might cause detachment, either with or without perforation of the globe. Fibrous bands in the vitreous he thought rarely caused detachment by contraction, though they might predispose to it by causing shrinkage and fluidity of vitreous. Cysts in the retina in its normal position might be of considerable size, and by bulging, cause detachment on either side. Some of the cures of detachment he thought were probably due to evacuation of the fluid contents of these cysts. Congenital detachment was not usually recognized, as it occurred in microphthalmic eyes, and was not then seen clinically. Summarized, the author's contention was that the essential feature in congenital separation between the layers of the retina was distension of the primary optic vesicle with fluid, and that the fibrosis of the vitreous was of secondary development, not the cause of failure of union between the inner and outer layer.

Mr. Leslie Paton, in continuing the discussion of detachment of the retina, pointed out that so long as the pathology of any disease was obscure, its treatment must be empirical, and frequently ineffectual. This was the present-day attitude in regard to detachment of retina, which was really a terminal effect. In cases of tumour of choroid, detachment was caused by accumulation of oedematous fluid behind the retina, this fluid being an irritative product. In some cases the cause was a perforating wound of the sclera, a case of which he quoted. Sometimes the detachment was due to a rapid exudation of lymph and serum into the sub-retinal space in severe choroiditis or general uveitis; or it might be caused by sub-retinal hemorrhage. He believed that detachment might occur from cicatricial contraction of the retina itself. From an examination of different types, he thought it safe to conclude that symptomatic detachment might arise from either a push from behind, a pull from inside, contraction of the retina, or a combination of any of these factors. He reminded the meeting of the main contentions of Raehlmann and Leber, and said that most cases of simple detachment occurred in myopes; he had found it to occur in all degrees of myopia, in which condition there was an increased cubical capacity of the scleral cavity. Vail, of Cincinnati, had shown that in myopes the circular ciliary muscle was usually atrophied from non-use, and that authority considered it part of a generalized atrophy of the ciliary body, with diminution of aqueous secretion and lowering of ocular tension. Mr. Paton then proceeded to discuss the question of sympathetic detachment, stating that he considered it a moot point as to whether it was really sympathetic, or whether the action was a setting up of a chronic cyclitis or uveitis in the sympathizing eye. He had had some cases of cure, i. e., restoration of function, and he realized that spontaneous cure sometimes eventuated, though similar cases left alone had not got well, as had the cases in point after his treatment. In every case he thought all the facts should be placed before the patient, so that he could decide on whether he would have anything done, or not, especially as knowledge on the subject was not yet complete enough to enable a safe prognostication to be made in any particular instance.

Maitland Ramsay agreed with Mr. Paton that no theory of causation of detachment sufficed to account for all the cases; the underlying cause in all was disease of the uveal tract and of the pigment epithelium, though this might be nothing more than senile degeneration. The presence of a collection of fluid between the choroid and retina led to many forms of evacuation, which the author briefly indicated—thirty-eight in number. The most important factor in the treatment hė considered to be absolute rest in bed; patients often volunteered the statement that they could see best in the morning after a good night's rest, but that sight failed as the day advanced. The rest period should not be less than four to six weeks. Relapses occurred most frequently in those who had rested but a short time. Every effort should also be made to improve the patient's well-being, particular attention being bestowed on procuring a regular action of bowels, kidneys and skin. Next, the pressure bandage was important; both eyes should be covered and the pressure must be quite appreciable, though stopping short of pain. But where the bandage caused pain, and on its removal the eye was red and irritable, it should be discontinued, owing to the possibility of iridocyclitis supervening. Cases which did not bear the pressure bandage he regarded as of unfavorable prognosis. The third important factor of treatment was sub-conjunctival injections after forty-eight hours of bandaging, but only if the electric ophthalmoscope showed that the site and character of the detachment appeared favorable. The pain following the injections (which he detailed) was mitigated greatly by using chemically pure chloride of sodium. Diaphoresis he did not employ until a fortnight's trial by his other methods showed little or no improvement. In some cases diaphoresis started an improvement which became slowly progressive. He used pilocarpine for this. There should be a period of leisurely recuperation afterwards; resumption of business immediately after cure seemed to invite relapse, and this was also helped by constipation. Failure was almost certain when the choroid was extensively diseased, when the pupils were sluggish in responding to mydriatics, and when intra-ocular tension was greatly reduced.

The debate was continued by Sir Anderson Critchett, Bt., and Messrs. Treacher Collins, Cruise, J. B. Lawford, Sydney Stephenson, Leighton Davies, Maxwell, Storey (Dublin), Higgens, Mackay (Edinburgh), and the President. The authors replied.

CLINICAL MEETING, ROYAL LONDON OPHTHALMIC HOSPITAL.

The President (Mr. F. Richardson Cross) read a paper on "Eye Symptoms in Kaposi's Disease" (Xerodermia Pigmentosum). In a general review of the disease, he stated that spots like freckles appeared in the first year or two of life, and were often precursors of the grave skin disease described by Kaposi in 1870, accompanied by dryness and atrophy of the skin, and other serious changes. Frequently it affected more than one member of a family. The prognosis was very gloomy; early death might occur from deep ulceration towards the brain or other vital parts, or from exhaustion or hemorrhage. The muco-cutaneous surfaces, such as the eyelids, became thinned, shrunken, and fissured with superficial ulcers; and the eyeball might participate in any phase of the disease, and warts might occur on the lid edges. The ocular conjunctiva was usually hyperaemic. Some cases showed pterygium, and the cornea became hazy from infiltration of its substance or from swelling of the epithelium. Ectropion was frequently present, leading to opacity or ulcer of cornea. But in many cases the eyes were open, and light was well tolerated. The optic nerve and intraocular structures were affected only late, if at all. Massage of the eyeball, especially by the use of calomel ointment, served to empty the superficial blood vessels. Dr. Whitfield had much improved one such case by applying X-rays. During the past year the author had had under observation two cases of Kaposi's disease, brother and sister, aet. 11 and 9½ years. The parents (cousins) were healthy. The boy was born in Ceylon, and when coming to England at nine months old, he became very sunburnt in the Red Sea, his skin becoming scarlet. Later, face, neck and shoulders were dotted with yellowish-brown pigment spots, and the skin became thin and shrunken. The girl was born in England, and arrived at Ceylon when a few months old; in her voyage she did not encounter excessive sun glare. At nine months of age her skin also became bad, and a little later a small nodule appeared on the cheek, but fell off, leaving no scar. She had implication of the eyelids, causing eversion. When 4 years old, the boy had a troublesome papule on the eye, for which he was treated by Sir John Tweedy, who reported that he first saw the patient in April, 1907, when he was under the care of the late Dr. Radcliffe Crocker for the skin condition. At that date there was subjunctival ecchymosis at the outer side, and at the inner side of the globe, between the cornea and the caruncle, a truncated conical swelling with some ecchymosis and conjunctivitis. There was so much photophobia that a satisfactory view could not be obtained. On the following day, under a general anaesthetic, he examined the eye and found an indolent swelling in the conjunctiva and episclera at the inner side of the globe. He scraped it with a sharp spoon, and applied powdered salicylic acid, and ordered the eye to be washed two or three times a day with a solution of salicylate of soda. The eye gradually improved until the seat of the swelling presented the appearance of a small phlycten. Eighteen months later, when Sir John next saw the case, the eyes were much stronger and were rarely inflamed. Two and one-fourth years later the patient saw J.2 with correcting glasses. When Mr. Cross saw the boy twelve months ago he had much photophobia, both winter and summer, and when in the light he was constantly sneezing. He found it difficult to read. Under chloroform, there was found to be a dull hyperaemia of the eyeballs, and two small phlyctenular swellings. The corneæ were somewhat glassy; the pupils were small, but reacted to light and opened freely to homatropine. A few days later he saw 6/18 for a moment, and J.6. Improvement was reported after massage of the eye with calomel ointment. In November there was acute inflammation of the right eye, and a fine infiltration running across the cornea. There was also haziness of the left cornea, and a marginal spot looking like pterygium.

Mr. R. Affleck Greeves showed micro-photographs of sections through the conjunctival growth removed from the eye of a boy suffering from Kaposi's disease, mentioned by the President (Mr. Richardson Cross). The growth consisted almost entirely of epithelial cells, mainly prickle-cells, and showed evidence of commencing malignancy.

Syphilis of the Eye.

Mr. R. Affleck Greeves read a paper on the microscopical anatomy of syphilis of the eye, illustrated by micro-photographs of sections taken from three cases. In the first case, one of old interstitial keratitis, he pointed to the presence of persistent, though empty, endothelial channels in the cornea, the remains of former blood vessels. The second case was one of gumma of the iris, the structure of which was peculiar in that the pigment epithelium had proliferated into the inflammatory tumor, and given clinically a pigmented appearance, causing to be made the erroneous diagnosis of melano-sarcoma. The third case illustrated the pathological appearances of syphilitic scleritis and of a proliferative form of choroido-retinitis characterized by the presence of dense tissue between choroid and retina. This tissue, he considered, was probably produced by the proliferation of the retinal pigment epithelium.

Pathological Anatomy of Retina and Choroid.

Mr. Greeves also read a paper by Mr. G. Komoto on "The Pathological Anatomy of the Retina and Choroid After the Complete and Partial Cutting Off of Their Respective Blood Supplies." It was based upon the pathological examination of an eye which was excised ten days subsequent to the cutting off of the retinal and posterior choroidal blood supplies by the removal of a lymphangioma from the posterior part of the orbit, along with a portion of the optic nerve. While the retina was completely necrotic posteriorly, all its layers were well preserved anteriorly. The author argued from this that the whole of the anterior part of the retina is probably almost entirely dependent on the choroidal circulation. The chromatophores of the choroid, and the pigment epithelium of the retina showed peculiar changes in form, caused by their being deprived of normal blood supply. The paper was illustrated by micro-photographs.

Accommodation in Aphakia.

Mr. E. Treacher Collins read a communication on apparent accommodation with aphakia. The case was described of a boy who had lamellar cataracts removed from his eyes when 7 years old by repeated dicission operations. When he was 14, it was discovered that he was using only one pair of glasses for both distance and reading. On testing his sight, it was found that he saw right plus 13, 6/6ths; left plus 13, 6/9ths; and with the same glasses in the same position on his nose, looking straight through the center of them, he read J.1 fluently. Any alteration in curvature of the cornea while he adapted his eye for the near point was excluded by examination with the ophthalmometer, and by the use of Hatten's eye-bath. Any lengthening of the antero-posterior axis of the globe was watched for by ophthalmoscopic examination. He could see just the same when the eyelids were held away from contact with the globe. When the pupils were semi-dilated with cocaine, he could still read J.1 with plus 13 in ordinary daylight with the right, but only J.2 with the left. When the pupils were fully dilated with atropine he could only read J.10 with plus 13 in ordinary daylight; but in the dark room with a strong light concentrated on the test-type he still read J.1, better with the right eye than with the left. When examined with the pupils well dilated, it was seen that in the right eye there was a membrane with a sharply defined central aperture in it, 3.5 mm. in diameter. In the left eye the aperture was larger and more oval in shape; the membrane in it, moreover, did not occupy the entire pupillary area, a space being left at the circumference between it and the pupillary margin. Both pupils were regular, free from any adhesions, and acted very briskly to light. The author considered that the evidence he had collected in connection with this case went to show that there was not any true accommodation; that the boy's power of seeing clearly at different distances was due to the cutting off of circles of diffusion, partly by the contraction of the pupils, but mainly by the small central openings in the membranes.

(*Continued*)

NEWS AND NOTES.

Personals and items of interest should be sent to Dr. Emory Hill, 30 North Michigan avenue, Chicago, Ill.

As these columns go to press on the 15th of the month previous to publication, contributors will kindly send in their items before that date.

Dr. Austin A. Hayden, of Chicago, was married to Miss Mary Phillips on April 28.

The optometry bill passed by the Pennsylvania legislature has been vetoed by the Governor.

Dr. George F. Keiper, of Lafayette, Indiana, has been elected a member of the Board of Education of that city.

Dr. Mortimer Frank, of Chicago, has been elected secretary of the Chicago Society of Medical History.

Dr. J. Morrison Ray has been elected a member of the board of trustees of the Louisville Public Library.

An eye, ear, nose and throat clinic has been established in connection with his day nursery by Father Dempsey at St. Louis.

Dr. John D. Courtnay, of Ottawa, has been given charge of the eye, ear, nose and throat work among the Canadian soldiers.

Dr. George E. deSchweinitz, of Philadelphia, was guest of honor at a luncheon given by his colleagues of Iowa City, Iowa, on May 13.

Drs. Charles Maghy and Sidney Walker, of Chicago, have sailed for England with the Chicago Unit which is to serve in a British field hospital.

Dr. Henry O. Reik, of Baltimore, has been elected recording secretary of the Alumni Association of the University of Maryland Medical School.

The profession will learn with deep regret of the untimely death of Dr. Mark D. Stevenson, of Akron, Ohio, who was one of the widely known ophthalmologists of the middle West.

Drs. Paul B. Cassidy and Oscar G. Flegley have been appointed clinical assistants, and Dr. Harry Judge has been appointed resident surgeon, at the Wills Eye Hospital, Philadelphia.

Out of the need of instruction for blind soldiers has grown the Marc Dufour Association, named for the Swiss ophthalmologist whose labors endeared him to those afflicted with this misfortune.

Dr. Alexander S. Rochester, member of the Eye and Ear staff of St. Luke's Hospital, Chicago, left July first for Los Angeles, California, where he expects to reside and practice his specialty.

Sir William Gowers died recently at his home in London. The name of Gowers is familiar to every ophthalmologist on account of his contributions to ophthalmic science from his standpoint as a neurologist. His book on Medical Ophthalmoscopy, written many years ago, is still a valuable text-book on an important subject.

The following deaths in the profession are announced:
Dr. Haltenhoff, of Bern, aged 73.
Dr. William M. Carling, of Battle Creek, Mich., aged 42.
Dr. Samuel G. Kelly, of Sedalia, Mo., aged 34.
Dr. Robert C. French, of Natchez, Miss., aged 35.
Dr. Harry H. Sherk, of Camden, N. J., aged 55.

William Monroe Carling, M. D., eye, ear, nose and throat specialist, Battle Creek, Michigan, died suddenly May thirtieth last. His splendid practice, prescriptions for glasses, finest instruments, complete office equipment and lease FOR SALE. A rare, splendid opportunity for a competent specialist. Address, Eva M. Carling,
Oaklawn, Battle Creek, Michigan.

E. Valude, a French opthalmologist, considering the question of traumatic cataract in soldiers, advises that such cases be recommended for discharge from the army, as they are no longer useful for active service, and that no attempt be made to remove the cataract. He considers the operation not free from danger, and if successful it leaves the patient without binocular single vision. He thinks it wise for the government to avoid responsibility for operation, leaving the soldier to follow his own desire in the matter in time of peace.

The problem of the soldier blinded by wounds is engaging the attention of the French government. It is proposed to utilize a Paris hospital for convalescing cases and establish schools of instruction from which the men will eventually be transferred to their former localities with the prospect of earning a livelihood in one of the numerous callings in which the blind are successful. The authorities are optimistic, feeling that practically all occupations are open to the blind, according to their intellectual capacities before their misfortune.

The following courses are offered by the Stanford University Medical School:

Clinical Ophthalmology H. Barkan

Monday, Tuesday, Wednesday, Thursday, Friday—2 to 3.
Saturday—2 to 4.

The class is limited to six. The work will consist of the study of clinical material from a diagnostic and therapeutic standpoint, with instruction in the use of the common methods of examination and treatment.

Minor operations will be demonstrated and as far as possible performed by the class. The work Saturday afternoon will consist of the demonstration of the usual operations on pig's eyes and performance of same by the class, ending with lantern-slide demonstration of pathological anatomy of the eye. Fee, $35.

The Eye and General Medicine H. Barkan

Monday, Tuesday, Wednesday, Thursday, Friday—5 to 6.
(August 9th to 13th.)

The class is unlimited. The work will consist of five illustrated lectures covering the eye conditions found in diabetes and nephritis, syphilis, syringomyelia, amaurotic family idiocy, hysteria, brain tumor, abscess, meningitis and other intracranial conditions. Fee, $10.

CHICAGO EYE CLINICS.

Hour.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
9 A.M.	Richard S. Pattillo (P.-G.) G. W. Mahoney (Poli.) R. B. Stephenson (P.-G.) Carl Wagner (E.E.N.T.)	*Geo. F. Suker (P.-G.) C. H. Francis (Poli.) A. Duncan (P.-G.) A. G. Wippern (E.E.N.T.)	W. F. Coleman (P.-G.) S. M. Hager (Poli.) H. N. Lyon (P.-G.) Carl Wagner (E.E.N.T.)	G. W. Mahoney (Poli.) Rich'd S. Pattillo (P.-G.) R. B. Stephenson (P.-G.) A. G. Wippern (E.E.N.T.)	C. H. Francis (Poli.) R. B. Stephenson (P.-G.) J. A. Cavanaugh (E. E. N. T.)	S. M. Hager (Poli.) C. W. Hawley (P.-G.) H. J. Morlan (P.-G.) A. G. Wippern (E.E.N.T.)
10 A.M.	Brown Pusey (N.W.U.) Geo. T. Jordan (N.W.U.) Robert Blue (N.W.U.) Every day, 10-12 A. M. Harry Gradle (E.E.N.T.)	J. R. Hoffman (E.E.N.T.)	Harry Gradle (E.E.N.T.)	J. R. Hoffman (E.E.N.T.)	Harry Gradle (E.E.N.T.)	J. R. Hoffman (E.E.N.T.)
1 P.M.	M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) Emily Selby (Inf.) *H. W. Woodruff (Inf.) *Oscar Dodd (Inf.) C. A. Leenheer (Inf.) D. W. Eiss (Inf.) E. R. Cressley (Inf.) C. C. Clement (Inf.) E. V. L. Brown (County) and Geo. F. Suker (County) Daily, 2:30 P. M. W. A. Fisher (E.E.N.T.)	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) E. K. Findlay (Inf.) Wm. E. Gamble (Inf.) J. B. Loring (Inf.) S. L. McCreight (C.C.S.) Robt. Von der Heydt (Inf.) L. G. Hoffmann (Inf.) A. P. Hunneman (Inf.) M. Goldenberg (Inf.) Francis Lane (Inf.) H. Walker (Inf.) W. A. Fisher (E.E.N.T.)	M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) Emily Selby (Inf.) *H. W. Woodruff (Inf. *Oscar Dodd (Inf.) C. A. Leenheer (Inf.) D. W. Eiss (Inf.) E. R. Cressley (Inf.) C. C. Clement (Inf.) Oliver Tydings (E. E. N. T.)	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) *Frank Allport (St. Luke's) *Frank Brawley (St. Luke's) E. K. Findlay (Inf.) Wm. E. Gamble (Inf.) *Paul Guilford (St. Luke's) *Casey Wood (St. Luke's) *T. A. Woodruff (St. Luke's) J. B. Loring, (Inf.) S. L. McCreight (C.C.S.) Robt. Von der Heydt (Inf.) L. G. Hoffman (Inf.) A. P. Hunneman (Inf.) M. Goldenberg (Inf.) Francis Lane (Inf.) H. Walker (Inf.) W. A. Fisher (E.E.N.T.)	M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) Emily Selby (Inf.) *Oscar Dodd (Inf.) C. A. Leenheer (Inf.) D. W. Eiss (Inf.) E. R. Cressley (Inf.) C. C. Clement (Inf.) H. W. Woodruff (Inf.) W. A. Fisher (E.E.N.T.)	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) E. K. Findlay (Inf.) Wm. E. Gamble (Inf.) J. B. Loring (Inf.) S. L. McCreight (C.C.S.) Robt. Von der Heydt (Inf.) L. G. Hoffman (Inf.) A. P. Hunneman (Inf.) M. Goldenberg (Inf.) Francis Lane (Inf.) H. Walker (Inf.) Oliver Tydings (E. E. N. T.)
3 P.M.	*Wm. E. Gamble (U. of I.) Wm. H. Wilder (Rush) H. S. Gradle Daily 3-5 (E. M. D.)	R. J. Tivnen (M. H.)	W. Allen Barr (C.C.S.) *Wm. E. Gamble (U. of I.)	Wm. H. Wilder (Rush) R. J. Tivnen (M. H.)	W. Allen Barr (C.C.S.)	Geo. F. Suker (P. G.) 2-5 H. Cuthbertson A. Duncan
4 P.M.	W. F. Coleman (P.-G.) H. N. Lyon (P.-G.) 2-5	C. W. Hawley (P.-G.) 2-5 J. F. Campbell (P.-G.) H. J. Morlan (P.-G.)	J. B. Loring (U. of I.) E. K. Findlay (U. of I.) G. F. Suker (P.-G.) 2-5 H. Cuthbertson (P.-G.)	C. W. Hawley (P.-G.) J. F. Campbell (P.-G.) H. J. Morlan (P.-G.)	W. F. Coleman (P.-G.) 2-5 H. N. Lyon (P.-G.)	

*Special operative eye clinic.

ABBREVIATIONS:

C. C. S.: Chicago Clinical School, 1844 W. Harrison Street.
E. M. D.: Emanuel Mandel Dispensary, 1012 Maxwell St.
County: Cook County Hospital, W. Harrison and Honore Streets.
Inf.: Illinois Charitable Eye and Ear Infirmary, Peoria and Adams Streets.
M. H.: Mercy Hospital.
Poli.: Chicago Policlinic and Hospital, 221 W. Chicago Avenue.
P.-G.: Post-Graduate Medical School of Chicago, 2400 Dearborn Street.
N. W. U.: Northwestern University, 2431 Dearborn Street.
Rush: Rush Medical College, W. Harrison and Wood Streets.
St. Luke's: St. Luke's Hospital, 1416 Indiana Avenue.
U. of I.: College of Medicine, University of Illinois, Congress and Lincoln Streets.

THE
OPHTHALMIC RECORD
A MONTHLY REVIEW OF THE PROGRESS
OF OPHTHALMOLOGY

Vol. XXIV CHICAGO, AUGUST, 1915 No. 8, New Series

ORIGINAL ARTICLES

ACUTE AXIAL OPTIC NEURITIS, AS AN EARLY SYMPTOM IN DISSEMINATED SCLEROSIS.*

BY
EDWARD A. SHUMWAY, M. D.
PHILADELPHIA, PA.

The very frequent involvement of the optic nerves and tracts in multiple sclerosis is a subject to which attention has often been called; but the disease is so comparatively rare in this country, that we do not have the fact sufficiently impressed upon our minds. According to Uhthoff, the involvement of the visual tracts occurs in nearly one-half of all cases. In hardly any other disease of the central nervous system is so high a percentage found; in brain tumor alone is it exceeded (papilloedema and optic neuritis), while in brain syphilis and tuberculous meningitis it is approximately the same. On the other hand, diseases like tabes and progressive paralysis, in which we ordinarily assume that optic tract involvement is very frequent, are far behind multiple sclerosis in relative percentages.

As is well known, the most frequently found clinical disturbance of the ocular apparatus in multiple sclerosis is partial atrophy of the optic nerve head, especially of its temporal half; and the typical visual field alteration is central scotoma, and undisturbed peripheral field. In one-third of all cases the affection may be unilateral. In rare cases the scotomas may be complicated by contraction of the visual field, but in many such cases hysteria is to be excluded as a complication; while occasionally irregular contraction of the peripheral field may occur, and exceptionally there may be only small excentrically located areas in which vision is preserved. These various types depend upon the location of the areas of degeneration which occur in the visual tracts. As I have already said, however, the characteristic condition is central scotoma, with atrophy of the temporal half of the nerve, which does not go on to complete atrophy, as in tabes, but leaves a considerable amount of vision. It will be noted that these symptoms are exactly what we find in retrobulbar neuritis, or, as Wilbrand-Saenger prefer, and rightly, I think, to call it, axial neuritis, because it is due to an involvement of the axial or papillomacular fibers in the nerve. Sometimes the onset is sudden, and the condition closely resembles acute axial or retrobulbar neuritis, such as we find often in association with sinus empyemas or orbital inflammations; very frequently it is slow in development, and then resembles the chronic types of axial neuritis due to various intoxications.

---

*Read before the Section on Ophthalmology of the College of Physicians of Philadelphia, April 15, 1915.

We owe especially to Bruns[1] and Stoelting,[2] to Frank,[3] Hoffmann[4] and Uhthoff,[5] the proof that the visual disturbance is relatively so often the initial symptom of disseminated sclerosis, and that it may precede the other symptoms of the disease by many years (up to twelve). Many times the etiology of acute axial neuritis is very obscure, and this fact induced Fleischer[6] to make a study of the subsequent histories of all cases of acute axial neuritis, which had been seen in the clinic in Tübingen, and also of the cases of acute papillitis, with similar clinical histories. He found that in 30 patients with acute axial neuritis, the ocular disturbance was the initial symptom of disseminated sclerosis in 66 per cent of the cases; while in 12 cases of acute papillitis, one-half subsequently developed the disease. We are so accustomed to think at once of sinus disease as the most probable cause of acute retrobulbar neuritis, in the absence of intoxications, that the following case will serve to refresh our memories and make us bear in mind the possibility of central nervous disorders, in determining the etiology of the process.

The patient was a young college instructor, 29 years of age, who consulted me first in June, 1907, at the end of the college year, because of failing vision in his left eye. He wore glasses which had been prescribed at the University Hospital eye clinic in 1902, and at that time vision was normal in each eye, after correction of a low amount of mixed astigmatism. He had noticed a blur before the left eye for several months, but had thought it was due to a necessity for change in the glasses. Examination showed vision of 6/5 in the right eye, and of 6/22 in the left. The right eye showed no fundus changes, but the left showed a distinct pallor of the temporal half of the optic nerve head. Study of the visual field of this eye revealed a horizontally oval scotoma for colors. Green could not be recognized at all, and other colors only in areas not smaller than one cm. square. His family history was negative. Personally he was a conscientious, hard student and teacher, of exemplary habits, except that he took little exercise. He had never smoked or used tobacco in any form, drank no intoxicating beverages, and denied any possible venereal infection. There was, however, a history of left sided nasal catarrh, and he was referred to Dr. W. G. B. Harland for sinus examination, who reported "a necrosing ethmoiditis, or localized atrophic rhinitis, centered chiefly in the posterior ethmoidal cells." X-ray examination—one of the first made for Dr. Harland, who was a pioneer in the use of the method for diagnosis of sinus disease—showed some thickening of the anterior wall of the sphenoid cells. Some glairy muc pus could be seen in the nose coming probably from this cavity. Urine examination was negative.

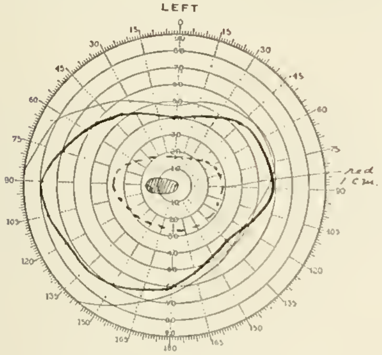


Fig. 1.—Field Taken June, 1907.

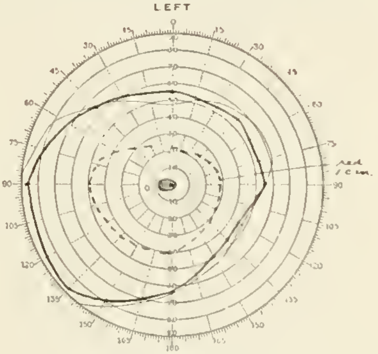


Fig. 2.—Field Taken May, 1915.

Vision in the eye fell to 2/45 in a short time. The patient was seen by Dr. de Schweinitz, and the diagnosis of retrobulbar neuritis was confirmed. Dr. Harland operated on the nose, and secured drainage of the affected sinus, and the patient was given mercury and strychnia. Under this treatment vision gradually improved to 6/12, in the course of four months, but the color scotoma persisted, although it became smaller. Later the vision fell to 6/22, and has remained at this level, with occasional variations, since that time, now eight years. At an examination one week ago, it was still 6/22, a small scotoma for colors could be readily demonstrated; the optic nerve now shows pallor of its entire head, most marked, however, upon the temporal side. After the death of Dr. Harland, in 1907, he was under the care of Dr. Grayson at the University Hospital, who wrote me that the patient had a "chronic purulent inflammation of the ethmoidal cells, principally the posterior," but drainage was sufficiently good, and no further operation was required. It seemed, therefore, a characteristic case of acute retrobulbar neuritis, due to ethmoidal sinusitis.

In the spring of 1908, however, one year later, while in my office, he complained of having had some feeling of weakness in the right hand, and in the muscles of the leg and thigh, after a very tiring year of teaching, but that this had cleared up after resting at Atlantic City. I thought they were simply fatigue phenomena, and found no further changes in the eye condition. Three years later, in April, 1911, he consulted Dr. Spiller at the Nervous Dispensary of the University Hospital, and according to the notes there, for which I am greatly indebted to Dr. J. W. McConnell, gave a history of gradually increasing weakness of the left leg for four years, with toe-drop, which had disappeared and reappeared during a period of two years, and was always worse when he was tired or nervous. For two years there had been some awkwardness in the use of his right hand, especially in writing, shaving or playing the piano. For two months there had been serious return of the toe-drop in the left foot; the right foot had also become involved, and there was great weakness in both lower extremities. The whole left leg occasionally felt asleep, and he could not tell whether he had his clothes on it or not. The right arm felt as if bound. The legs were so bad, that he could not continue his college work, and could not get around at all without a cane. Insomnia also had become a very serious complication.

At the time of the first examination, the gait was found to be weak, but there was no toe-drop and no spasticity or ataxia. Slight Rombergism was present. The pupils were equal but reacted sluggishly to light on the right side, more promptly on the left. The arms were strong, but the reflexes were exaggerated, and there was slight diminution of tactile sensation in the right index finger. The left leg was weak; the right leg normal. Reflexes were exaggerated on both sides; there was no foot clonus or Babinski. Faradism to legs gave initial contraction good, with rapid decrease in strength to zero. Occasionally a single good contraction was followed by several fibrillary ones, this in turn by another good contraction. At this time Dr. Spiller was inclined to consider the condition myasthenia gravis, although no ocular weakness was demonstrated beyond a weakness of convergence, and the sluggish pupils. Residence at Atlantic City improved him for a time, so that he was able to walk about for a short distance. The improvement, however, lasted only a short time, and was followed by increased difficulty in walking. The gait became typically spastic-paretic, and in December, 1911, he was admitted to the University Hospital, where he remained for some time and was studied carefully by Dr. Chas. K. Mills. The Wassermann test was found to be absolutely negative, and no abnormalities were present in the urine or blood. The ataxia was associated with increasing exaggeration of the deep reflexes; foot clonus appeared on the right side, and plantar stimulation of that side caused the typical Babinski sign. He was given nux vomica and increasing doses of potassium iodide, without much improvement.

Slowness in control of the bladder appeared, constipation, insomnia and intense hypochondria became almost intractable features. No distinct sensory changes—touch, pain, cold and heat, or position were ever found, except the condition mentioned concerning the right index finger. The awkwardness in the use of the right hand gradually increased, and at times a slight action tremor was noted, but this was not easily demonstrated and consequently was always questionable. Speech was always good, never slurring or scanning. There was no dysarthria. Later on in 1914 he consulted Dr. Geo. Price, who sent me the following report of his examination made in May, 1914 (abridged):

"Gait ataxic; Romberg sign marked; pupils equal but react sluggishly to light; hearing normal; tongue protruded in midline; musculature of face normal; no difficulty in swallowing; speech normal. Grip with both hands fair, that of the right hand being slightly weaker than the left. Ataxia of both upper extremities present but not marked; no tremors. Knee jerks exaggerated. Babinski sign present on both sides. No ankle clonus. Stereognostic sense impaired—objects placed in either hand were recognized, but only with difficulty. There was occasional imperative micturition. No mental symptoms except marked hypochondriasis. My conclusion was that he presented a rather typical form of insular sclerosis."

With this diagnosis Dr. Mills and Dr. McConnell fully agree, and Dr. Spiller believes the symptoms are best explained in the same way. At my latest examination, the knee jerks seemed no longer to be exaggerated, but very sluggish, and Dr. Spiller informs me that it is frequently the case, that after a period of exaggeration, the reflexes may be lost, because of interruption of the reflex arc, by increasing involvement of the posterior columns of the lumbar cord.

The especial point of interest to the ophthalmologist in the case is the question of the optic nerve involvement. The condition was a typical one of acute axial neuritis. It could have been produced either by the sinus empyema, or have been the initial symptom of the later developing insular sclerosis. The first alone was thought of in the beginning, but in the light of the subsequent developments, it seems more reasonable to assume that the central nervous disease was the more probable cause. In multiple sclerosis the involvement is usually said to be bilateral, but, according to Uhthoff, it is just as frequently unilateral. As Wilbrand-Saenger[1] say, the similarity of the visual disturbances in multiple sclerosis and acute axial neuritis is extraordinarily great. In both there may be a sudden loss of vision, rapid increase of the same often to complete blindness, accompanied by head and orbital pains, spontaneous improvement in a short time, and the disappearance of the visual disturbance except for an absolute or relative central scotoma. Both may show a papillitis, or also a normal eyeground with later appearing temporal paling of the optic papilla; and in both it is rare to find permanent blindness. They conclude that in isolated occurrence of acute axial neuritis, a probable diagnosis of multiple sclerosis should only be made, *if toxic, hereditary, acute or chronic infectious processes attacking the optic nerve can be excluded.* Especially is it to be thought of if the visual disturbance shows a fleeting character, makes no further advance, but improves spontaneously, and if a single nervous symptom appears which can be considered as part of a multiple sclerosis. Further suspicious indications of the disease are striking variations in the severity of the visual disturbances, recurrences and changeableness of the visual field defects, such as the addition of homonymous hemianopsia or irregular contractions of the peripheral fields to the originally detected scotomata, etc.

When the ocular involvement is a slowly developing one, there may be a question of diagnosis between multiple sclerosis and *chronic* axial neuritis due to intoxications, and under such circumstances disturbances of the gait, reflexes and sensation should be carefully sought for. Unilateral involvement of the optic nerve would point toward multiple sclerosis, as in intoxication amblyopia the condition is usually bilateral. In all cases, however, the complication with hysteria is to be borne in mind, as it not infrequently occurs, and adds greatly to the difficulty of the diagnosis.

Finally a word concerning the etiology and pathology of the disease. Neither can be said to be settled. The sclerotic areas, which are found scattered throughout the brain, spinal cord and optic tracts, are variously interpreted, and different theories have been proposed to account for them. The most commonly accepted one is that the sclerosis arises from an inflammatory process, which commences around the arterioles, and produces a proliferation of the fine connective tissue about the nerve fibrils; this is followed by degeneration of the medullary sheaths of the axis cylinders, but many of the axis cylinders themselves remain in good condition, so that secondary ascending or descending degeneration of the nerve fibers does not usually occur. Such a process would seem to be best explained by the action of a toxin in the blood or lymph channels. According to Oppenheim, the acute infectious diseases may produce multiple sclerosis, such as typhoid, variola, scarlatina and morbilli. Influenza may also cause it, or cholera, diphtheria, whooping-cough and articular rheumatism. It has been seen to follow the puerperium. Oppenheim[7] has called attention to intoxications from metals, and carbonic dioxide poisoning as causative factors, and Gerhardt has traced a case to poisoning by mercury. The query arises in my mind whether the disease in the present instance might have been caused by absorption of toxin from the purulent focus in the ethmoidal cells. So far as I know, no such theory has ever been advanced, and I offer it with some hesitancy. In all our cases of irido-cyclitis and uveitis, however, we are accustomed to search carefully for the presence of a focus of infection elsewhere in the body— in the sinuses, the tonsils, the teeth, etc., from which a toxin could be elaborated, and be the cause of the ocular inflammation. If the toxic theory be accepted, I see no reason why a toxin produced in this way could not be assumed as the cause of the lesions of disseminated sclerosis, as well as to consider them due to infectious diseases or metallic poisoning. Such a theory would explain the similarity in the lesions of retrobulbar neuritis due to intoxications and those found in disseminated sclerosis, and if accepted, would suggest the propriety of careful examination for possible foci of infection in all cases of the disease.

Bibliography.

1. Wilbrand-Saenger. Die Neurologie des Auges,· Vol. V., p. 30.
2. Bruns and Stoelting. Zeitschr. f. Augenheilk., iii, p. 126.
3. Frank. Zeitschr. f. Nervenheilk., Vol. XIV, 1898.
4. Hoffmann. Zeitschr. f. Nervenheilk., Vol. XXI, p. 1, 1902.
5. Uhthoff. Arch. f. Psych. u. Nerv., Vol. XXI, 1 and 2.
6. Fleischer. Archiv. f. Augenheilk., Vol. XLVI-1, p. 113, 1908.
7. Oppenheim. Diseases of the Nervous System, p. 210.

SHRAPNEL WOUND OF THE OCCIPITAL REGION WITH INVOLVEMENT OF THE VISUAL CENTERS.

BY
CASEY A. WOOD, M. D.
CHICAGO.

Illustrated.

As is well known, the present style of trench warfare has brought about an unusual proportion of injuries to the head. Both British and Continental—especially German—literature confirms and illustrates this fact and in reports from the seat of war one reads references to the large percentage of eye injuries. For example, Elschnig (*Medizinische Klinik*, May 16, page 553, 1915) draws attention to a great variety of ocular injuries among the German soldiers. He encountered a large number of these traumatisms which were easily recognized and where eyesight was saved by proper treatment; but there were many other instances in which the time for effective management had passed before they reached the ophthalmic surgeon and in consequence irreparable lesions and blindness resulted.

As instances of ocular injuries received in actual warfare are not as yet common in this country, the following report may be of interest: J. H. P., aged 21, single, a soldier in the British army was wounded on March 13, 1915, by the explosion of a shrapnel shell. At the time he was struck he was on his knees, stooping forward and assisting another soldier who had been wounded, so that the shrapnel fragments struck him on the back of his head. He felt as if he had been hit with a club but did not suffer any acute pain. He did not become unconscious and when his wound had been dressed by a comrade he was able to walk to a distant part of the trenches whence he was carried the following evening by litter to a dressing station. He was then sent to a base hospital where (on the third day) the skull was examined and he was told that a depressed fracture had been elevated. At the same time a small and superficial piece of steel was removed from the scalp wound.

He was shortly afterwards removed to England when new symptoms—swelling at the back of the head and neck, rise of temperature—developed. On April 8th, 1915, when in the London Hospital an operation was done to relieve an extensive infection of the scalp and neck, a drainage tube being inserted within the original wound, coming out an inch and a half below the left mastoid process. At this operation an irregular piece of shrapnel shell nearly an inch long and from a third to half an inch in thickness was found and removed, after which the local conditions very greatly improved. An X-ray examination showed no additional foreign body at the seat of injury.

While walking about the ward on April 30th, he had an attack of vertigo, was obliged to sit on the edge of his bed, felt very "queer" and noticed that his left arm began to jerk and his feet to dance. He grasped his left wrist with his right hand and then lost consciousness. He was afterward told that he had had a convulsion, with some sort of "left sided symptoms." He has not had before or since any of these convulsive attacks.

The patient was during this time examined by Arnold

Lawson and Grainger Stewart, and discharged after seven weeks, greatly improved.

When seen by the writer on July 9th, 1915, he had been in America several days and, although somewhat shaken by the voyage across the Atlantic, seemed to be in good condition. He is a tall, healthy-looking young man, weighing 176 pounds and presenting all the appearances of good health. Temperature and pulse normal. He has been short-sighted most all his life time but with correcting lenses obtains central vision of 20/15ths minus and Jaeger one in each eye.

Just behind the vertex in the median line there is a depression in the skull with, apparently, some loss of the under-lying bone. This corresponds to a scar about two inches in length almost parallel to the middle line. It begins a little to the left and crosses the median line downward and to the right. This (recent) cicatrix is not sensitive to the touch. There are also three, smaller, evidently recent scars below the upper insertion of the left sterno-mastoid.

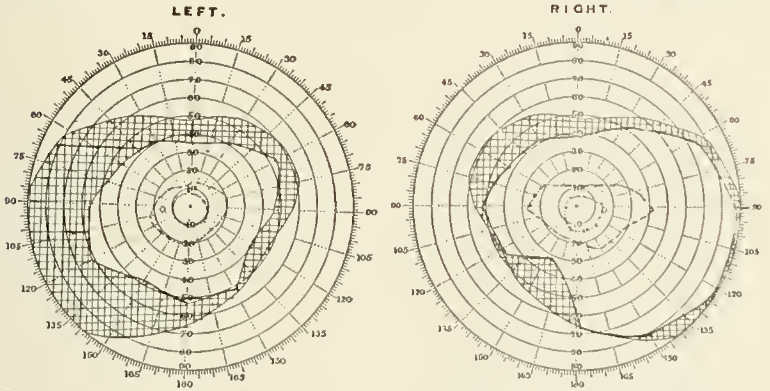
About the only subjective symptoms the patient now complains of are morning frontal headaches and "blurred sight," the latter referred to the left eye. If he over-exerts himself in any way, the headache is somewhat increased, but it generally disappears before noon. The head pains entirely disappeared before he left England, but since the ocean voyage to this country they have recurred.

Blood examination by Dr. N. S. Davis, Jr., showed erythrocytes 4,800,000, leucocytes 16,900; hemoglobin 85%.

The patient's pupillary reactions, ocular tension, muscle balance and the external appearances of the eye are all normal. On dilating his pupils and scanning the fundi he presents a few white, very small dotted exudates scattered over both fundi, in addition to slight myopic changes. On the right side just above the disc is what appears to be the remains of an old hemorrhage. The important alterations in the fundi are, however, a definite blurring of the outlines of both nerve-heads, with obscuration of the physiological cups and loss of transparency in and swelling of the papillary tissues. The retinal vessels, both veins and arteries, are engorged and slightly tortuous. In fact, the picture is that of a recent, though receding, mild, bilateral papillitis. The fields of vision (two examinations at a week's interval gave almost identical charts) are shown in the accompanying illustrations. The areas, especially on the left side, for white, red and green, are decidedly contracted.

The treatment has been entirely hygienic, following the definite instructions of the patient's oculist, Mr. Arnold Lawson, except that frequent very hot fomentations followed by very cold applications to both temples and ocular regions, ordered by the writer, appear to give relief to the headaches, which at this date have almost disappeared.

At my request, the patient called on Dr. Archibald Church for a more complete neurological examination. He reported that the functions of the cranial nerves showed nothing abnormal, "aside from the restriction of the fields above mentioned. There is also no evidence of disturbance of innervation in the distribution of the cord and spinal nerves. Reflexes, sensation, trophic conditions, are everywhere normal. The knee-jerks are brisk, but on repeated examinations prove to be equal, as are the deep and superficial reflexes elsewhere.



Perimeter Charts in Casey Wood's Case of Shrapnel Injury to the Brain.

"Evidently the young man received an injury to the occipital lobes affecting the right cuneus more than the left. Whether this is entirely traumatic in character or in some sense dependent upon a secondary infection, I am unable to state. I would suggest that he be carefully watched for rise of temperature, and that his blood be searched for any evidence of leucocytosis."

Whether the damage to the optic nerves will result in further invasion of the fields and go on to optic atrophy remains to be seen. If the eye symptoms are entirely due to the traumatism, as such, the youth and good health of the patient will probably bring about recovery with no additional damage to sight. If, on the other hand, the papillitis results from an infective meningitis the usual results of a post-neuritic atrophy of this character are to be feared.

BIRTH INJURIES OF THE EYE.

Report of a Case Presenting a Rupture of Descemet's Membrane.

BY
CHARLES P. SMALL, M. D.
CHICAGO.

Injuries of the eye received at the time of birth are of not infrequent occurrence, but because the great majority of such injuries are of only temporary duration with no permanent changes resulting, this subject has received only passing attention in most of our standard text-books of ophthalmology. Probably not more than twenty-five per cent of such cases are reported. A sufficiently large number of such injuries have, however, been observed to demonstrate the fact that most of the tissues of the eye, including the bony structures of the orbit as well, have been injured in this way, forming a group which presents distinct characteristic changes. De Wecker in 1896 and True in 1898 described such cases, and Thompson and Buchanan in 1903 made a careful investigation of them.

A study of recorded cases shows a general agreement in the following particulars: Practically all have followed a difficult instrumental delivery, although cases have been reported of an unusually long confinement, associated with a contracted pelvis, where injury occurred when no instruments were used; one eye alone is generally affected; the injury is usually associated with other signs of traumatism, as abrasion of the skin, sub-conjunctival or retinal hemorrhage, hyphemia, etc.; and that a more or less characteristic form of corneal opacity is usually present.

Forceps cause injuries either by direct or indirect pressure from fractures or depressions in neighboring bones; also by the production of intra-cranial or intra-orbital hemorrhage and through intra-ocular pressure due to compression of the skull. In fractures, bleeding into the meninges is thus produced, and according to Hoffman,[1] may account for some of the cases of muscular paralysis, ocular and otherwise, and for optic nerve atrophy. In facial presentation the caput succedaneum may be situated directly over the eye, causing great swelling and ecchymosis, but in the majority of cases this passes off completely. The lids may be bruised, cut, torn and even the eye gouged out. Praun[2] states that pressure of the forceps near the ear may produce facial paralysis, lagophthalmos and drying of the cornea.

Traumatic exophthalmos and evulsion of the eye-ball usually occur from forceps delivery and an unscientific application of the blades, although Fage[3] reported a case of luxation of the eyeball during the process of a natural delivery without the employment of instruments. Exophthalmos may result from compression of the skull or by direct backward pressure of forceps, acting like a speculum which dislocates the globe in enucleation. Servel[5] reported a case in which high application of the forceps in a narrow pelvis was made, and when the head was delivered the left eye was found lying partly outside the orbit, and with a dense corneal opacity. Turnbull[6] observed an instance in which the right eyeball was completely dislocated from the orbit and was lying on the cheek; the optic nerve had been torn across. In this case forceps had been used but no force applied. Pick[7] saw a patient one week after birth with bruises of the lids and an exophthalmos of four or five mm., but motility preserved. There was also a milk-white opacity of the cornea which subsequently cleared. One blade of the forceps had pressed upon the eyeball and orbit, producing edema of the cornea and rupture of Descemet's membrane. Donaldson[8] reported a case in which the eyeball was dislocated on the cheek during instrumental delivery. The eye was at once replaced and three years later the eye appeared normal and retained good vision.

Among other forms of injury Stumpf and von Sicherer[9] found hemorrhage into the retina and optic nerve, in forty-two out of two hundred children examined shortly after birth. They questioned whether the hemorrhage might not lead to glioma. Wendell Reber[10] states that obstetric injuries account for many cases of interrupted binocular vision, from retinal hemorrhage; and H. Fisher[11] says that some cases of congenital word-blindness, or inability to learn to read, are due to obstetric injuries from limited meningeal hemorrhages over the left angular gyrus, resulting in failure of development. Central paralysis of an ocular muscle is caused by bleeding in the base of the brain as a result of fracture of the skull. Most cases show direct rupture or contusions of the muscles or nerves, first at the orbital ends, secondly at the base of the skull or optic foramen. Thomson and Buchanan[4] reported a case of convergent strabismus and nystagmus from injury to the rectus externus at birth. The prognosis for normal function is bad in such cases.

The most frequent of all birth injuries are those involving the cornea. Of 112 cases collected by Wolff[12] the cornea was injured in 32. Of the whole number 93 were instrumental deliveries. These corneal changes may, as Parsons[13] states, be of three varieties: (1) A diffuse opacity, due to edema, which is transitory; (2) a diffuse opacity, indeterminate in position, which is permanent, due probably to edema with consecutive inflammatory changes and rupture of Descemet's membrane; (3) a linear or irregularly striped opacity which is permanent, and due to a rupture of Descemet's membrane and sometimes of the posterior corneal lamellae. This anomaly was believed by Thomson and Buchanan to be of rare occurrence outside of Glasgow, where rickets and pelvic deformities are common.

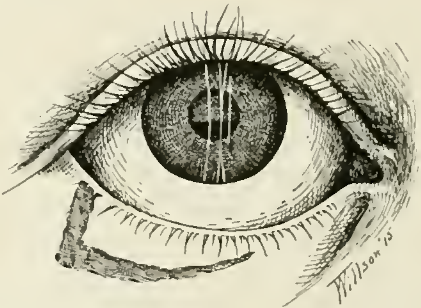
It is this third form of corneal opacity resulting from a rupture of Descemet's membrane, to which I would at this time call particular attention. Such ruptures were familiar to pathologists before clinicians gave them much attention; they were at first regarded as artefacts. Becher in 1875 gave the first anatomical description of them, and Gepner was the first to produce specimens showing repair of such ruptures in buphthalmic eyes. These opaque lines pass vertically, obliquely or horizontally across the whole or part of the cornea, in a straight or curved manner, or concentrically with the limbus. In most cases there is more than one. Endothelium is usually intact over the gap, hence the preservation of transparency.

The ruptures are caused by various processes which produce increased intraocular tension, or stretching of the eyeball, such as hydrophthalmos, intra-ocular tumors, keratoconus, high myopia, peripheral ectasia of the cornea and traumatism with forceps. Authors have been unable to determine the line of pressure which causes rupture in any particular direction in the cornea.

Coates[15] has described the various forms which these ruptures may take, and the subsequent changes they undergo, giving results of his observations in cases of infantile glaucoma, myopia and conical cornea. The absence of ruptures in most cases of high myopia is because in this condition it is the posterior hemisphere of the globe that stretches. The essential cause of rupture of Descemet's membrane is stretching of the cornea, the lamellae of which are more elastic than the membrane; consequently when divided, the cornea retains its original form, while the membrane assumes curly and spiral forms. In my case there is apparently only the rupture of the membrane without involvement of the cornea proper. When first observed by lateral illumination and under high magnification, it appeared to me very much like a piece of glass which has been scratched by a glazier's diamond on the posterior surface, the anterior surface being wholly transparent and even. Quite similar to this case must have been the one reported by Chance,[17] who thus describes it:

The patient, aged 30, was born after a prolonged labor, and finally accomplished only by instruments. There was a singular fibre-like opacity extending vertically down the posterior layer of the cornea. It at first appeared to be a persistent pupillary membrane, but on attaining wide mydriasis, the fibrous opacity was seen to be in the substance of the cornea. The fibres branched like a curved Y, bending over the nasal half of the cornea. At the temporal half, near the limbus, were two short fibres, one pointing up, the other down. These opacities were in the posterior portion of the cornea, highly refractive and appeared to project into the chamber like the dripping flaws on the inside of a glass bottle. It may be presumed that the torn portion was very early sealed by fibres, the excess of which caused the projection on the posterior surface. The anterior surface of the cornea was smooth and neither opacities nor infiltration could be made out in epithelial, subepithelial nor outer zone of the laminae.

My patient is 11 years of age, the younger of two children. Her mother said it was a breech presentation, but her attending physician has since told me that the child was turned, and delivered with forceps, head first. There was an extensive laceration. The child weighed 14½ lbs. At the present time there are scars on both sides of the head over the parieto-temporal areas, made by the forceps; the one on the right side showing that the wound had been deep, while the tip of the same blade cut the lower right eyelid, resulting in the scar shown in the drawing. There are three distinct linear opacities extending vertically across the entire cornea. In addition to the corneal injury there is a partial opaque lens, dislocated upwards. There is the tremulous iris which accompanies this condition. There is atrophy of the optic nerve and a slightly increased intra-ocular tension. Vision is reduced to counting fingers at four inches. Vision in the left eye with a plus 0.50 cylinder, axis 90 is 20/20. The lower edge of the lens seems to be less curved than it usually appears in this condition, and much darker in color than the remaining portion of the lens. A similar condition has been reported by Wurdemann[18] where there was a partial upward discoloration of the lens. A brown line extended across the lens, evidently the remains of a blood stain from a hyphemia which was present after birth.



Verticle Linear Opacities of Cornea due to Rupture of Descemet's Membrane. Upward Dislocation of Lens. Triangular Scar on Lower Lid from Forceps Injury.

In addition to the cases already mentioned, this peculiar and unusual form of linear opacity due to rupture of Descemet's membrane at the time of birth, has been observed by Braav,[14] Green,[19] Henderson,[20] and a few others.

BIBLIOGRAPHY

1. V. Hoffman. Lehrbuch d. gericht. Med. 1891.
2. Praun. Die Verletzungen.
3. Fage. Arch. d'Ophth. Aug. 1907. Ophthalmoscope, Aug. 1907.
4. Thomson & Buchanan. Trans. Ophth. Soc. United Kingdom. 1903.
5. Servel. Interstate Med. Jour. April 1908.
6. Turnbull. Brit. Med. Jour. Nov. 27, 1909.
7. Pick. Deut. Med. Woch., No. 24. 1908.
8. Donaldson. Ophthalmoscope, VIII, p. 217.
9. Stumpf & Sicherer. Beit. Z. Geburtshilfe, u. Gynak, No. 3, p. 408.
10. Wendell Reber. Trans. Soc. Ophth. A. M. A. 1910.
11. H. Fisher. Med. Press. May 18, 1910.

12. Wolff. Ophthalmoscope. 1907, 1909.
13. Parsons. Pathology of the Eye, Vol. IV, p. 1135.
14. Braav. N. Y. Med. Jour. Sept. 14, 1907.
15. Coats. Trans. Oph. Soc. Unit. King. Vol. 27.
16. M. Landolt. Arch. Ophth., 30, 11, Nov. 1910.
17. Chance. Ophthalmoscope, 1909, p. 75.
18. Wurdeman. Injuries of the Eye.
19. Green. Oph. Record, XLX, p. 334.
20. Henderson. Trans. Oph. Soc. Unit. King., p. 154.

A CATARACT INCISION LEAVING AN UNDETACHED CONJUNCTIVAL FLAP WITH BRIDGE OF CONJUNCTIVA ON TEMPORAL SIDE.

BY

FRANK C. TODD, M. D.,

MINNEAPOLIS, MINN.

A conjunctival flap is very desirable after cataract extraction, because of the fact that it more readily seals and hence closes the wound more quickly than is the case where the incision is entirely within the cornea. There is less liability to infection and iris prolapse. Indeed, the advantages of a conjunctival flap seem to be so well recognized that most operators have accepted the incision as a routine procedure. While the conjunctival flap is therefore distinctly advantageous, it does not result in exact apposition of the two surfaces, for there occurs considerable retraction of the conjunctiva. Furthermore, if vitreous presents there is nothing to hold it back.

Kalt[1] of Paris secures the advantages of a closed wound by the insertion of a small silk suture into the cornea before making his incision, tying the suture tight after the cataract is extracted. He seems to secure good results with this operation, but it has not been generally adopted, and the idea of a suture in the cornea does not meet with favor for obvious reasons. C. H. Williams and de Mendoza[2] also used corneal sutures.

In an article on cataract by Huizinga[3] of Grand Rapids, Mich., there is described an operation which the writer credits to Schweigger[4] and Pansier.[5] This operation consists of making vertical parallel incisions with scissors in the conjunctiva just above the center of the cornea and down to the cornea. The bridge of conjunctiva thereby created is dissected up, but left attached at both ends. Under this bridge is placed a thread so that the bridge may be lifted up during the remainder of the operation. The customary cataract incision is then made and allowed to come out of the sclera just under the bridge. It is claimed that the thread facilitates extraction. Dr. Huizinga commends the operation as having certain advantages, but states that its disadvantages are a more difficult and prolonged operation and slightly more reaction afterward.

---

[1] Arch. d'opht., xiv, 1894.
[2] American Encyclopedia of Ophthalmology, p. 1706.
[3] Reprint from the Medical Standard.
[4] Arch. Ophth., May, 1898.
[5] Ann. d'ocul., Brussels, 1899.

In August, 1913, I saw de Speville at the Rothchild Ophthalmic Hospital in Paris perform an operation which consists in leaving the same narrow bridge of conjunctiva well up on the eye-ball over the median line. The bridge was made with the knife after it emerged from the sclera. He credited Vacher of Orleans, France, with having brought the procedure into practice, but stated that it was formerly described by Des Marres. This operation was described also by Robert Scott Lamb in the Ophthalmic Record, November, 1913, who evidently independently conceived of the idea, and to whom we are indebted for having brought it to the attention of American ophthalmologists.

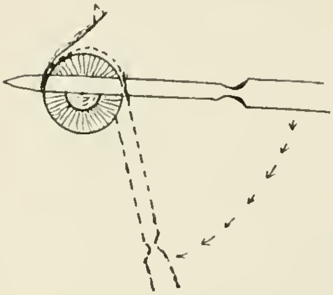


Fig. 1

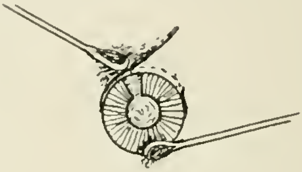


Fig. 2

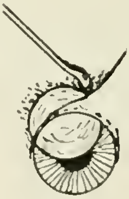


Fig 3

Fig. 1.—Handle of knife on temporal side. Dotted line knife represents final position of knife, which has come through sclera at dotted line and then passed under conjunctiva leaving the latter uncut on the temporal side.

Fig. 2.—Showing how pressure and counter pressure may be made in the usual manner.

Fig. 3.—Showing how the lens may be wheeled out with the spoon if it hesitates under the conjunctival flap.

After seeing the work of de Speville at the Rothchild Hospital, Paris, I performed some of these operations. It had certain advantages, but also caused some difficulties. It is often difficult to carry the knife far enough up on account of a deep orbit or some other anatomical condition, which prevents proper completion of the incision, especially on the temporal side. But the main difficulty occurs in the delivery of the lens; for if counter-pressure is made outside of the conjunctiva, the instrument holds the conjunctival bridge down, and does not produce the desired gaping of the wound; and it is undesirable to slip the spoon under the bridge lest the eye move during the operation and it becomes caught (if the eye turns upward suddenly, as is so often the case, the instrument may be abruptly forced into the chamber, being held, as it is, under the conjunctival flap). Then too, it will often be found that the flap holds the lens back in the process of delivery, binding down on it. It was for this reason that Schweigger used a thread, with which he lifted the bridge during delivery of the lens.

To obviate the above objections to an undetached conjunctival flap and yet maintain the advantages, I devised the following procedure and have practiced it in thirty-seven operations during the past ten months with very satisfactory results. In four other cases I have attempted it and found it necessary to sever the bridge. It is more difficult of performance in a deep-set eye, but is usually very simple.

The procedure is as follows: After puncture and counter puncture have been made, the handle of the knife is turned downward so that the end of the blade on the nasal side does most of the cutting, though the heel of the knife is allowed to cut to some extent. As the incision proceeds, the point end of the knife is allowed to do the cutting. The incision is carried well up on the eyeball in the conjunctiva, so that when it is completed, the nasal incision extends well up above the center of the cornea, ending in the median line of the cornea or to the temporal side. The temporal incision is very short, perhaps about twice or thrice the width of the knife blade, in fact just wide enough to permit the incision to come completely through the sclera at or near the corneoscleral junction (Fig. 1). Thus a considerable bridge of conjunctiva is left on the temporal side. Counter pressure may thus be readily made without placing the spoon underneath the conjunctival flap, and delivery is quite simple through the larger (nasal) opening (Fig. 2).

If it is found that the lens in its delivery hesitates under the flap, the edge of the spoon which has been used for counter pressure may be placed against the edge of the lens and the latter turned out with a wheel motion (Fig. 3). Irrigation may then be freely done through either incision, because the flap is held quite securely and indeed more firmly than when only a narrow median bridge remains. The operator may feel quite free to perform the toilet of the operation to the extent required.

In this operation we have the advantages of the suture without its disadvantages, and the bridge of conjunctiva, which is efficacious in holding the flap in place (as in the Schweigger-Pansier operation or the operation described by Vacher and Lamb). It is an operation which is easier of performance, both in the making of the incision and afterward in the delivery of the lens. In unmanageable patients it is a source of great comfort during the process of the operation and after its performance; and I am sure in several of my cases has prevented the loss of vitreous that might otherwise have taken place.

It is my custom to operate cataracts regardless of their maturity, provided the patient's sight is so reduced as to make him unhappy, and in those cases, where there is cortical matter, free irrigation is practiced, so that all the cortical matter may be washed out. I have found that this operation enables the surgeon freely to irrigate without the danger that exists when a complete incision has been made. Other advantages are the prompt sealing of the wound, thus lessening the liability to sepsis, preventing subsequent prolapse or incarceration and insuring union. A study of the cases operated on shows that less astigmia occurs after this method than following complete incision.

Altogether the operation presents such advantages that I wish to urge its trial on the part of others.

ANNULAR OPACITY OF THE LENS, FOLLOWING A PENETRATING WOUND INTO THE VITREOUS CHAMBER.*

BY

T. B. HOLLOWAY, M. D.

PHILADELPHIA.

In 1912† I presented before this section the history of a concussion accident to the eye that resulted in the formation of a so-called Vossius ring or annular opacity of the lens and referred briefly to a second case. The lesion was the result of a baseball accident and was associated with proptosis, extra and intraocular muscle palsies and the usual commotio retinae. As the literature of the subject was reviewed from the time of Vossius' first report in 1903, and the theories of Vossius and Höeg referred to, these will not be reviewed again in detail. At that time a number of the members of this section had seen one or more cases and it seemed to be the prevailing opinion that despite the few cases on record this lesion was by no means an uncommon one following severe concussion injuries of the eye. Since that time I have seen three other cases, two histories being recorded below. The majority of these cases so far on record have resulted from blunt force, although Gifford, Caspar, Natanson, Purtscher (three cases) and recently Strader have recorded instances due to penetrating wounds but in all of these, with the exception of one case observed by Purtscher, the wound was anterior to the lens, that is, in the cornea or at the limbus. The case shown this evening also received a penetrating wound but in this instance the wound of entrance was wholly posterior to the lens.

---

*Read before the Section on Ophthalmology, College of Physicians, Feb., 1915.

G. K. J., aet. 30, was admitted to my service at the Polyclinic Hospital on 12, 22, 14, with the history of having been struck on the eye by a piece of metal a half hour before. The vision of the left eye was 6/6, part, while with the right eye he could count fingers at 18 inches. Situated 13 mm. above the margin of the right lid, slightly external to the midline, was a small perforating wound. Up and out on the globe there was a subconjunctival hemorrhage about the size of a finger nail and in the center of this, beginning 9 mm. from the limbus, was an oblique perforating wound of the sclera about 2.5 mm. in length, through which a bead of vitreous protruded. The cornea was clear, no blood in the anterior chamber, the pupil moderately dilated, and as far as could be determined the lens was clear. The vitreous was much clouded and extending into it from the direction of the wound were numerous string-like hemorrhages. The disc and larger vessels could be located but the details of the fundus were obscured. In extreme upward and outward rotation of the eye a gray reflex was seen, attributed to a probable small retinal detachment in the vicinity of the wound. A foreign body could not be seen. Owing to the various conditions attending

---

[†] Trans. Section on Ophthalmology, College of Phys., Feb. 15, 1912. Ann. of Ophthal., 1912, XXI, p. 586.

the case, I decided not to wait for an X-ray examination and localization. An uncomplicated magnet extraction was made through the wound of entrance. The piece of steel was wedge shaped, 4 mm. square; one edge was of razor-like sharpness, the opposite edge having a thickness of 1 mm. The weight was 1.5 decigrams. The patient was not seen by me again until one week later when the eye was considerably injected, due to a cyclitis. In the posterior cortical layers of the lens could be noted a number of large but not dense geometric opacities, while anteriorly there was a typical Vossius ring made up of punctate dots; it was least pronounced on the nasal side. A number of large opacities due to hemorrhage could be seen in the vitreous. Eleven days after the accident the vision of the right eye was 4/60 and the eye generally improved. All the large posterior opacities had disappeared but the anterior annular opacity was still present but faint on the nasal side. Eighteen days after the accident only a punctate opacity remained, the lens becoming perfectly clear a few days later. Five weeks after the accident the vision was 6/12.

Case II. R. S., aet. 12, was admitted to Dr. de Schweinitz' service at the University Hospital on 9, 30, 14, with the history of a concussion accident to the left eye, the result of a B.B. shot. There was some injection of the globe; small hemorrhage into the anterior chamber; decided haze of the vitreous and reduction of vision to hand movements at 1 metre. When I first examined the patient twelve days later there was a fine punctate condition of the central portion of the lens in the superficial layers with a circular punctate opacity, somewhat vague, a Vossius ring in the subsiding stage. Up and out in the posterior layers of the lens was a sector-like opacity. In the upper and outer portion of the iris near the ciliary border were two small ruptures through which a red-reflex could be obtained. There was a partial blurring of the disc margin and a slight edema about the posterior pole of the fundus. Between the disc and macula could be seen an area of retino-choroidal disturbance slightly larger than the disc. Five weeks after the accident no trace of the annular opacity could be seen. Since then the vision has improved to 6/7.5 part. The sector-shaped opacity in the lens has remained permanent.

It will be recalled that the characteristics of this lesion are its central position; punctate character, at times associated with a punctate condition within and also beyond the circle;

its almost invariable disappearance and finally the fact that it can seldom be seen by oblique illumination. The opacity is generally attributed to delicate changes occurring in the capsular epithelium.

Case I as described above parallels to an unusual degree Case V in Purtscher's series and as far as I am aware they are the only two cases of this type on record. Both resulted from chips of metal flying from a hammer, in each instance giving rise to a perforating wound through the lid and through the sclera. In Purtscher's case the wound was 4 mm. long and began 4 mm. from the limbus, in my patient the wound began 9 mm. from the limbus and was 2.5 mm. long. In the first instance the annular opacity was deficient on the nasal side, in my case it was less pronounced at this point. With both patients there was a successful and uncomplicated extraction of the foreign body. The findings of Höeg, the history of Steiner's patient, as well as the two cases just referred to, show that indentation of the cornea forcing this structure against the iris, as suggested by Vossius, is not essential for the production of this lesion. In the patient shown this evening there is no doubt but what the point of impact and resulting perforation was behind the lens and in explanation of the production of the annular opacity, I accept with Purtscher the explanation of Steiner that the increased tension in the vitreous chamber pushed the lens forward against the iris. Necessarily there would be increased tension in the aqueous chamber. Whether actual contact of iris and cornea results in such instances is problematical. Coats seems to believe "that if the pressure came from behind, the iris would give way before the advancing lens, and that no impress of the pupil would be produced unless it becomes imprisoned between the lens and cornea."

Case II is similar to those previously recorded as the result of blunt force and need not be dwelt upon. In conclusion I desire to repeat that I do not regard this lesion, as ordinarily produced, an uncommon occurrence in severe concussion cases and I have not the slightest doubt but what dozens of these cases have been observed and never recorded. Still further, I believe it would be still more frequently observed if it were, or could be, routinely sought for in these cases of severe concussion which in my experience occur very frequently as the result of play among children or in the pursuit of one of the various forms of athletics. That it can and does occur as the result of trauma applied behind the lens has been definitely shown, but naturally these cases are fewer in number.

Since this data has been assembled Zimmerman's excellent review of this subject has been noted. He states thirty-two cases are on record and cites the histories of two more. Aside from the bibliography given by Purtscher and Zimmerman, the following have described cases of annular opacity of the lens.

(1) Purtscher: Centralbl. f. prakt. Augenhk., 1913, XXXVII, p. 282.
(2) Zimmerman: Ophthalmology, 1915, XI, p. 327.
(3) Zentmayer: Penn. Med. Jour., 1911, XIV, p. 899.
(4) Coats: Oph. Rev., 1913, XXII, p. 295.
(5) Strader: Annals of Oph., 1914, XXIII, p. 582.
(6) Robinson: Oph. Record, 1914, XXIV, p. 156.
(7) Cates: Oph. Record, 1915, XXIV, p. 244.

AN INTERESTING CASE OF ACUTE RETRO-BULBAR NEURITIS.

BY
CARL WILLIAMS, M. D.
PHILADELPHIA, PA.

In September, 1914, Mrs. L. consulted me, complaining of blurred vision in the left eye of four days' duration. Mrs. L. stated that nine days previous she had received a blow over this eye, which had been serious enough to cause some continued tenderness. Also at about the same time she had taken a sea bath before the cessation of her usual normal menstruation.

Mrs. L. had previously consulted me five years ago, also in 1912, and again in 1914. These visits all concerned a matter of refraction and at none of them was any pathological condition discovered. She was, at the time of her last visit, about 30 years of age and apparently in good health.

On the occasion of the initial visit in September, 1914, time was limited and vision only was taken and a mydriatic prescribed. The patient was directed to return the next day. The next day the vision of the right eye, which on the first visit had been 5/4, was still normal. The left vision, however, had fallen from 5/15 to 5/30. An examination of the right ground discovered a small patch of pigmented choroiditis below the macula. There was also a small area of erosion above the macula. Above the disk was a larger, deeply pigmented area. The left fundus presented a red and granular macula—much more so than the right. Just beyond the macula and running into it was a lighter and ill-defined area of erosion, exudate or more probably edema. Along the lower temporal artery was a small linear patch of atrophy. The disk was normal in appearance. The perimeter chart of the left eye showed a small central scotoma for color, especially for blue, with a normal form field. The right field was normal.

Because of the old lesions in the right eye, and the macular changes in the left, with a small central scotoma, the case at this time was considered one of macular edema or choroiditis.

Vapor baths were prescribed and the patient referred to the Pepper Laboratory of the University for urine and Wassermann examination. The urine examination was soon reported negative. The Wassermann was "slightly positive." Mercury and potassium iodide were prescribed.

On September 17th, three days later, the left vision had improved from 5/30 to 5/5, though the letters were read slowly and the patient complained of visual haze. The macular edema was much improved. Another Wassermann now reported negative, as was also a urine examination. The blood showed red 4,330,000, leucocytes 8,400, hæmogoblin 76 per cent. A Wassermann made in another laboratory was reported negative on September 20th.

On September 22nd, thirteen days after the first visit, the vision of the afflicted left eye was normal, 5/4. The macula showed only slight erosion. Baths, mercury and potassium iodide were continued.

On October 11th, one month after the initial examination, vision of the left eye, having been normal for thirty days, Mrs. L. again reported some blurring of the same eye. The 5/4 minus was read from the chart. Only fine white linear changes were found in the eye ground. Two days later Mrs. L. reported rapid loss of vision in the last twenty-four hours. Much to my surprise, the left vision was found to be reduced to counting figures at one foot. The right vision was still normal. Through the ophthalmoscope the left disk was slightly paler and more blurred at the nasal margin than that of the right eye. The macula showed no change. Now for the first time undoubted retro-bulbar neuritis was diagnosed.

The patient was now admitted to the University Hospital. Here sinus, X-ray, blood and urine examinations were made without result. Soon the papillo-macular bundle became decidedly pale, but after two weeks, on November 5th, vision once more returned to 5/4 minus, though there was still slight blurring of the disk margins. The disk color became fairly normal.

Three days later, Mrs. L., who had in the meantime returned to her home, reported failing vision in her right eye. Vision was found to be 5/5 minus. The fundus examination was negative. A gynaecological examination made at this time found no abnormal condition beyond some general relaxation of the vaginal walls. The menstrual flow since the interrupted one in September had been thin and scanty, and a pessary was inserted.

Mrs. L. was again admitted to the University Hospital. Here a central scotoma rapidly developed in the right eye and vision shortly fell to finger counting at one foot, disk margins blurred and papillo-macular pallor soon became evident. Von Pirquet and Noguchi made at this time were negative. Under the direction of Dr. Stengel, careful metabolic examinations were made covering a period of several days, hoping in this way to discover some cause for the recurring attacks of retro-bulbar neuritis. He reported a faulty elimination of nitrogen, not of high degree, but, as he says, sufficient to justify the continuing a plan of diet which he had previously outlined in conjunction with the general treatment employed, which was again being pushed.

Now, for the first time since September, a normal menstruation took place, the previous ones having been scanty, of short duration, thin in color, and accompanied by a backache—conditions heretofore unknown. Gradually again the vision began to improve and the ophthalmoscopic picture returned to normal, so that by December 15th, five weeks after the onset, vision of the right eye was 5/4 minus. Form and color fields were also normal.

Now, after three months, no further recurrence has taken place; all medication except tonic treatment and the continuation of the non-nitrogenous diet has been stopped. The pessary was removed some weeks ago, since which time another abnormal menstruation has occurred. Otherwise Mrs. L. has remained in apparent good health and has developed no symptoms worthy of note until about January 1st, when she began to complain of pins and needles sensations in hands and feet, and of numbness extending up to the waist, and more recently to the shoulders and chest. She now reports this condition has advanced to such a degree that it is a source of much inconvenience.

Aside from interest in this rather peculiar form of ocular disease, this case has been most interesting because baffling in the attempt to find the causative factor. Our examinations leave us the doubtful Wassermanns, the metabolic and possibly the menstrual theories; also, I think, we must consider a possible nervous origin. Is it possible the persistent and increasing peripheral sensations are the forerunners of some more serious disturbance of central origin? Nettleship first pointed out that in retro-bulbar neuritis not symptomatic, there is a predisposition to marked functional or organic disease of the nervous system. He says: "An attack of retro-bulbar neuritis usually single, or, if double, with much delayed symmetry, generally ending in partial or complete recovery, should, I think, always cause some anxiety as to the future onset of disseminated sclerosis or some other disease of the cord not tabes." Wilbrand and Saenger, who have written most exhaustively on this subject, have found a surprisingly large percentage of the idiopathic forms of retro-bulbar neuritis to have been followed sooner or later by disseminated sclerosis.

SPONTANEOUS DISLOCATION OF A SCLEROSED LENS INTO THE ANTERIOR CHAMBER.

BY
FREDERICK KRAUSS, M. D.
PHILADELPHIA, PA.

George R. came to the Episcopal Hospital dispensary October 28, 1914, complaining of pain and redness of his left eye. He had been told some years ago that he had a cataract, but he never had had any treatment. The eye had never been inflamed. Five days before, while taking a warm bath, he felt a sudden pain and jumping sensation in his left eye. Since then he has had pain and redness in his left eye, which is gradually getting worse.

His family history is negative, except that one sister has conical cornea since infancy. The patient is a fairly well nourished, heavily-built man, short in stature, accentuated by kyphosis and bowed legs. His head is large, forehead prominent, bony protuberances over the anterior fontanelle and left temporal region. His chest is symmetrical, with prominence of the eighth and twelfth ribs at the anterior costal angle. The heart is slightly enlarged, with systolic mitral murmur and weak aortic second sounds. The urine shows a trace of albumen and a few granular casts.

The ocular condition was as follows. The right eye showed a normal pupillary reaction. Ophthalmoscopically, the lens had several spicules, the eye ground being normal. He is hypermetropic, the uncorrected vision being 5/30. The left eye showed marked tarsal and ciliary congestion with photophobia, the cornea being apparently clear. In the anterior chamber, extending from the lower angle to the upper third of the cornea, was a dark brown, somewhat translucent mass, with a rounded, smooth edge, giving the appearance of a sclerosed lens, the so-called cataracta brunescens. The pupil was 5 mm. in diameter and immobile. The vision consisted of hand movements at one foot. No view could be obtained of the fundus.

The patient was admitted to the hospital ward and operated upon the next day. After instilling cocaine and eserine, an incision was made through the corneal limbus, as in the usual extraction operation. Immediately after the counter puncture was made, fluid vitreous began to exude freely, with softening of the eyeball. The incision was rapidly completed, a loop introduced below the equator of the dislocated lens, which was then extracted, the speculum removed, and the eye kept closed with light pressure to close the corneal wound. After several minutes the partly collapsed eyeball had regained its shape, with a contracted pupil in the center of the cornea, showing no prolapse. Eserine was again instilled and both eyes bandaged.

There was normal healing, with very little inflammatory reaction. Contraction, probably beginning in the vitreous, had retracted or folded the upper edge of the iris back upon itself, giving the appearance of a coloboma. The corneal wound edges are smoothly healed. The vision gradually improved from light perception to 1/60 of normal three weeks after operation, due to fine haze of the vitreous.

Spontaneous dislocation of the cataractous lens has been observed occasionally in cases of Morgagnian cataract, in which softening degeneration of the cortex allows the nucleus to escape into the anterior chamber when the capsule is ruptured. The case which I have the honor to present shows a hard, dark brown lens, slightly smaller but thicker than normal, which popped into the anterior chamber suddenly, while the patient was taking a warm bath. It is evident that a great weakening of the zonula or capsule had occurred, probably due to disease of the posterior half of the eyeball. Drault has shown that the anterior capsule is thicker than the posterior in the adult, though in its earlier development and at birth the posterior capsule is the thickest. The posterior capsule evidently ruptured in our case, as shown by the immediate flow of fluid vitreous before completion of the incision. In all such cases any attempt at expression of the cataract would be suicidal, the loop being an invaluable substitute. As in other cases of fluid vitreous, the collapsed eyeball resumed its normal shape in an incredibly short time.

The appearance at this date, three weeks after operation, shows a striate keratitis, the posterior capsule indicated by many very fine black lines, through which a fine vitreous haze is discoverable. An occasional clouded glimpse of the vessels and nerve is obtainable, though insufficient for accurate diagnosis. I expect the vision to improve.

P. S.—Three months after the operation the media were perfectly clear, showing no disease of the fundus. The vision, with plus 7 D. spherical, was five-sevenths of normal.

The microscopic sections of the dislocated lens, made by Dr. C. Y. White, director of the pathological laboratory of the Episcopal Hospital, demonstrated that both anterior and posterior capsule were present, showing that the rupture had occurred at the zonula.

Lagrange, of Bordeaux, has recently discussed eye injuries occurring among soldiers. He calls attention to the results of bullet wounds of the face and skull fractures with resultant damage to eyes which appear intact. He cites extensive laceration of the uveal tissues resulting from the displacement of air by the explosion of large projectiles, and suggests that such concussion may account for lesions of the nervous system without penetrating wounds, the proof in these cases not being accessible as in eye injuries.

AN OPERATION FOR THE DIRECT DRAINAGE OF THE LACHRYMAL SAC INTO MIDDLE MEATUS FROM THE STANDPOINT OF THE OPHTHALMOLOGIST.

PRELIMINARY REPORT.

BY
A. E. PRINCE, M. D.
SPRINGFIELD, ILL.

The operation for the intra-nasal drainage of the lachrymal sac thus far described presents peculiar technical difficulties to the oculist, especially in our larger cities, where it is not so customary for the ophthalmologist to operate in the field of rhinology. This was true in the original method by Caldwell, published in 1893, in which he describes his method of passing a probe and upon its withdrawal following with a burr. The method described by West in 1908 is even more involved, and has not been simplified materially by Clark, who published many pages of cuts and instruments in the last number of Ophthalmology. It is my belief that every oculist will appreciate a technic which will enable him, unassisted by the rhinologist, to drain the sac into the middle meatus, at the same time avoiding the handicap of the external operation on the face, with the possibility of a scar; or the possibility of a subsequent operation on the lachrymal gland to control the excessive lachrymal secretion, and also a technic which may be executed in the presence of an active phlegmon. The steps of the operation are: (1) Local anaesthesia to sac and corresponding area in nose; (2) open the punctum and pass a canaliculus knife into the sac; (3) pass a lachrymal grooved director through the sac and into the nasal canal; (4) direct the groove of the director toward the nose and slit the approach to the sac by passing a cataract knife along the groove. Stretch this opening with the largest lachrymal probe in your possession. (5) It will now be found that a gouge 4 mm. wide can be readily passed to the bottom of the sac, and by pressing it toward the nose it will enter the middle meatus and can be readily seen from below. (6) Remove the gouge and introduce a strip of sheet lead 30 mm. long, 4 mm. wide, and 1 mm. thick, with the point slightly tapered. While observing the end of the lead plate through the nose, withdraw it until it almost disappears, when it will be found that the nasal wall of the sac, together with the corresponding portion of the lachrymal bone, will rest on the extremity of the lead plate, and by grasping the end of this by means of an appropriate forceps, one will be able to remove the inner wall of the sac, the thin lachrymal bone and the end of the strip of lead at the same time, and establish permanent drainage.

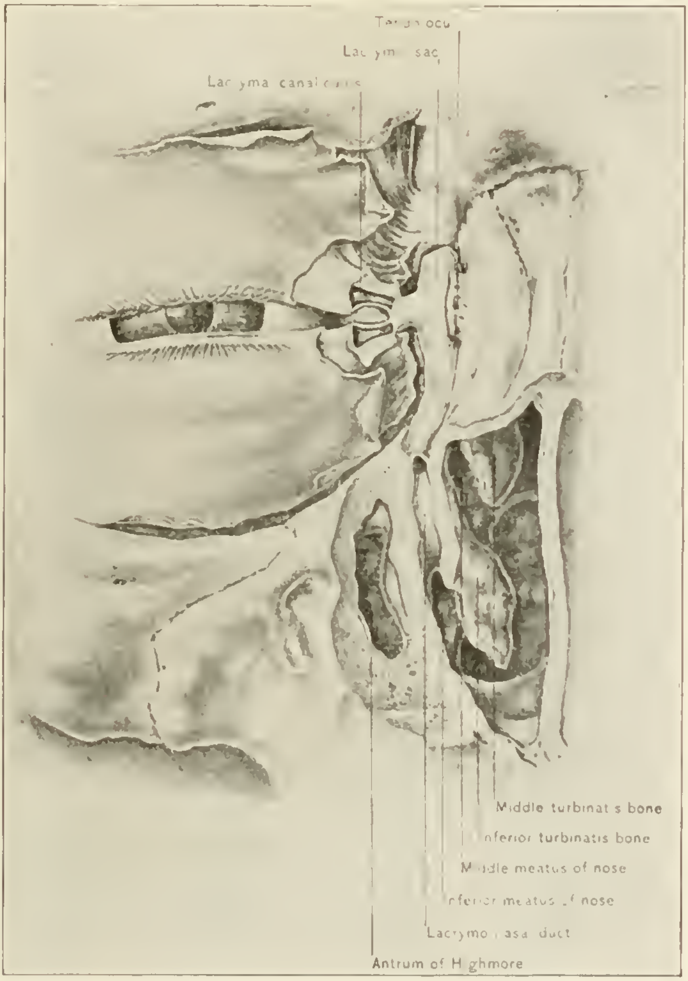


Fig. 1. Relations of Lachrymal Apparatus.

It is found to be unnecessary to remove any portion of the middle turbinal, for the opening is not obscured by this structure.

The most important feature of the operation is the manner of grasping the extremity of the lead plate. I found in practice that I did not have an instrument of exactly the correct shape, although I succeeded in accomplishing the object by means of a Kerrison rongeur. Should the reader find that he has no available instrument, I would refer him to F. A. Hardy & Co., Chicago, who have succeeded in meeting the indication in an inexpensive way by what will be known as a lachrymal sac forceps.

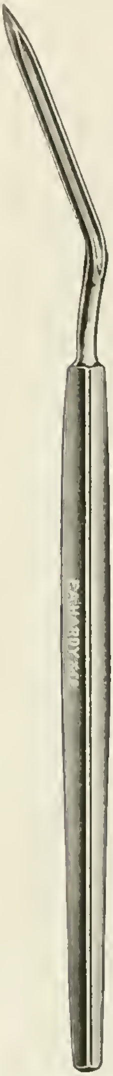


Fig. 2. Lachrymal Grooved Director.

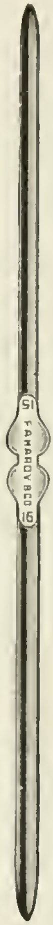


Fig. 3. Bowman's Probe.

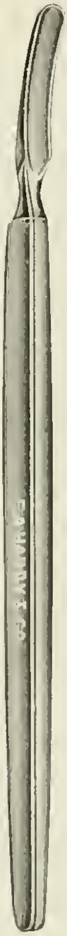


Fig. 4. Lachrymal Gouge.

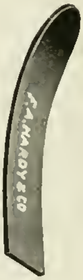


Fig. 5. Lead Strip.

If it is further desired to enlarge the opening into the nose by encroaching on the nasal bony canal, it may be readily done by introducing the same instrument through the canaliculus opening, one branch of which may be passed into the canal and the other into the nose through the opening made by the gouge.

The after treatment consists of passing a large probe while the outer nasal opening in the sac is healing.

The accompanying cuts are almost self-explanatory. Fig. 1 is a cut taken from Deaver's Surgical Anatomy of the Head and Neck, and gives the reader a very intelligent conception of the relation of the floor of the sac and the middle meatus at the point where the gouge would pass. It will be seen that it is anterior to both the inferior and middle turbinal bones.

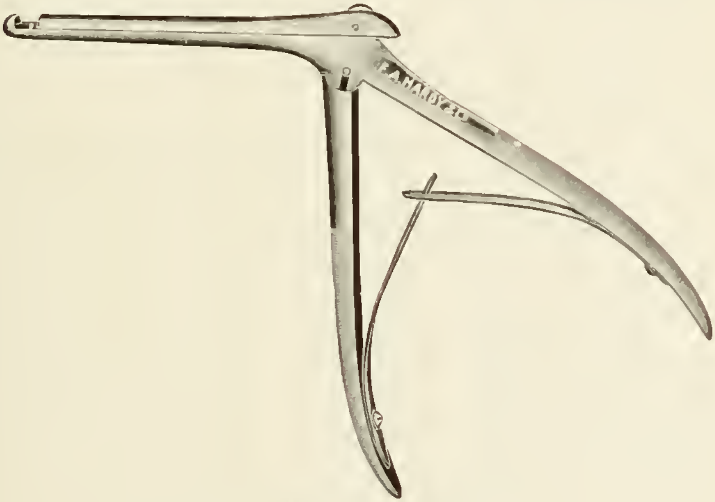


Fig. 6. Special Lachrymal Sac Forceps.

Fig. 2 represents the "lachrymal grooved director," which needs no comment.

Fig. 3 represents a No. 16 Bowman's probe.

Fig. 4 represents a special gouge.

Fig. 5 represents a strip of lead cut from a sheet of the same metal.

Fig. 6 represents a lachrymal sac forceps designed to enter the nose and grasp the end of the strip of lead together with the tissues in contact with it. Little more is required.

REPORTS OF SOCIETIES

CLINICAL MEETING ROYAL LONDON OPHTHALMIC HOSPITAL.

(Concluded)

At first the appearances were considered by three oculists to be those of tubercle, consisting of two blurry yellowish-white foci at the macula. In spite of treatment, an acute panophthalmitis developed, and twenty-nine days after being first seen a Mules operation was performed. A specimen taken at the operation showed a pure culture of the pneumococcus of Friedländer.

Artificial Maturation of Cataract.

The third paper was on a method of artificial maturation of cataract allowing of early extraction. The method was, briefly, as follows: The night prior to operation the pupil was well dilated with atropine, and paracentesis was performed with an iris knife. Massage was applied directly to the lens capsule by a smooth iris repositor, and this was followed by indirect massage by the back of a lens scoop. Atropine was again instilled. If no irritation resulted, no more atropine was used after the day of operation. Often within a week the eye was perfectly quiet, the pupil returned to its ordinary size and regained its activity. Extraction could then be resorted to, either without or with iridectomy. In this way the whole process could, in many cases, be gone through in three weeks to recovery.

Sarcoma of the Orbit.

The last paper described a case of sarcoma of the socket. The patient had already had his left eye removed, and was wearing an artificial eye. About August, 1910, it would not keep in position, owing to the presence of a pediculated growth toward the outer part of the socket. The mass was excised, but in November, 1910, it recurred. A section of the original growth raised suspicions of malignancy, and a few days later the lid margin, with the conjunctiva and the whole contents of the orbit were removed. The structure, as described by Professor Walker Hall, was suggestive of perithelioma. Possibly the tumor was caused by a fine crack in the artificial eye which he had been wearing.

Absorption of Early Cataract.

Mr. W. B. Inglis Pollock (Glasgow) read a paper on dissolving senile cataract in the early stages, in a consecutive series of 100 patients with senile cataract who were under and dionin, fibrolysin and iodolysin drops. Forty-five per and dionine, fibrolysin and iodolysin drops. Forty-five per cent of the 178 eyes showed great improvement, and 41 per cent an improvement in vision. Seven per cent remained stationary. In 8 per cent the treatment failed to arrest the progress of the cataract. The method did not cause pain, and could be persevered with over long periods. Attention should be directed to the general health, and the internal administration of an alkali was an advantage. Several patients had, he said, remained free of recurrence for a period of from three to six years.

Morgagnian Cataract.

Colonel Herbert read a communication on the capsular opacities of Morgagnian cataract. He showed photo-micrographs of the capsule of a very long-standing cataractous lens, which had passed beyond the Morgagnian stage. The capsule showed scattered white dots clinically. Under the microscope these were found to consist of spaces formed between layers of thickened capsule, and containing, mainly, lens debris, similar to the "milk" of the cataractous lens. Reasons were given for supposing that similar changes may account for the globules or clear rings of after-cataract. And reference was made to two processes at work, singly or together, in senile cataract: the one, representing simply deficient nutrition, resulted eventually in an abnormally dry shrunken lens. The other, apparently due largely to destruction of the lens cells lining the capsule, consisted essentially in undue admission of aqueous into the lens and its results.

COLORADO OPHTHALMOLOGICAL SOCIETY.

W. F. MATSON, M. D., PRESIDING.

April 17th, 1915.

Blindness the Result of Sympathetic Ophthalmia.

Dr. Melville Black, Denver, presented man of 27 who had injured right eye and six weeks later developed sympathetic inflammation in the left eye. The right eye had been removed five days after the onset of sympathetic trouble, but the sympathizing eye had progressed to the formation of cataract, seclusion and occlusion of the pupil, with slightly lowered tension, until there remained naught but perception and projection of light which were good. The patient wished to know if anything could be done to partially restore vision.

DISCUSSION. Dr. C. E. Walker, Denver, said that operative procedure would probably cause the loss of the little he had.

Dr. D. A. Strickler, Denver: Because of the reduced tension I would leave it alone.

Dr. E. R. Neeper, Colorado Springs, believed that he would do a careful needling.

Dr. W. C. Bane, Denver, would leave the eye alone.

Dr. Edward Jackson, Denver, would be inclined to leave the eye alone, but cited a case similar that had been operated four or five times with a good result. He said however that should he decide to operate this case he would remove the lens.

Dermoid Cyst of Right Eye Involving Portion of Conjunctiva and Cornea.

Dr. Black presented this case. The cyst was 8mm. long by 6mm. broad, located horizontally and externally; although classical in that it involved both corneal and conjunctival tissue and had hairs growing from it, these cases are sufficiently rare to make them of interest and worthy examination. Dr. Black also showed two sisters upon whom he had operated for trachoma.

Scleritis in a Woman of 42.

Dr. Black presented this case with the following history. Woman came under his care during his service at the Clinic, December 30th, 1914. Diagnosis, scleritis both eyes. The inflammatory condition occupies all of the exposed sclera of each eye. Corneae clear. Pupils dilate under atropine but not widely.

Eyes inflamed for one year. Worse during menstruation. General health is good, always has been, and she looks to be in perfect physical condition. Laboratory tests:—Urine negative. General reaction to tuberculin test, strongly positive. Wassermann, negative; luetin test positive and cobravenom test positive.

Treatment:—She was put on tuberculin injections, keeping below the reaction point, and given Griffith's mixture. Improvement for a time was marked and then she began to get worse. She was then given atophan, 75 grains daily for three days, then after an interval of rest it was repeated. This did not show lasting improvement.

Question: In view of the positive luetin and cobra-venom tests, should we, in the absence of all clinical symptoms and history, together with the fact that she has healthy twin children three years of age, I ask should we put this woman on specific treatment?

DISCUSSION. Dr. W. C. Bane, Denver, said that he knew of no drug that had better effect upon diseased conditions of the eye, than mercury.

Dr. W. H. Crisp, Denver, suggested that the condition of the teeth might have something to do with the scleritis.

Dr. E. R. Neeper, Colorado Springs, would not fail to give antisyphilitic treatment. He had had a similar case, however, which he believed to be due to toxins emanating from the mouth and had given alcresta ipecac (Lilly) and the patient made a complete recovery. In this case the dentist had failed to find trouble in the mouth. Very many of these cases are liable to be self-infecting and to prevent this he had used fluid extract ipecac, in weak solution, as a mouth wash with good results.

Pemphigus of the Conjunctiva.

Dr. W. C. Bane, Denver, had a patient present with the condition above mentioned; this patient had been presented to the society before but was now presented because of involvement of the other eye. The case was now being treated by X-rays, a treatment which had proven successful in the eye first affected. Report will be made later as to the result.

Retinitis Pigmentosa.

Dr. Bane presented this case with the accompanying facts and history. Woman, age 49 years, first seen in 1895 at which time the vision was 6/21 with both eyes. Patient had had poor vision and night blindness since childhood. During the six years preceding this time, numerous illnesses had considerably impaired her already poor vision. No consanguinity of parents. Nine children in family, one other sister with similar eye defect. An aunt of her father's and a cousin on her father's side also had like trouble.

Examination in 1895 revealed eye reflexes normal. Movements good. Optic discs of dull, muddy appearance. Vessels small. Appearance typical of retinitis pigmentosa. Fields diminished as shown by perimeter to but 15° from fixation point. Red field less than that for green. Correcting lenses gave vision of 6/15 with each eye.

In 1899 patient returned complaining that sight was failing, and upon examination vision was found to equal 6/30 in each eye.

In 1915, five days ago, she again returned giving history of rapid failure of vision during the past six months, accompanied by pain in and behind the eyes and in the top of the head. General health has been good. Vision found to be 5/60 in each eye. Apparently there has been an increase of the number and size of pigment spots in the right retina. Vision is limited to the central portion of the field.

In the discussion of Dr. Bane's case of pemphigus, Dr. W. F. Matson, Denver, reported a case which he had had in which both eyes were affected.

Dr. Black said that the case of pemphigus was very instructive and congratulated Dr. C. E. Walker upon making the diagnosis, whom it appeared had made the diagnosis some years ago at a time when the disease was in its incipiency. Dr. Black also said that it would be interesting to see what effect the X-rays will have on the last eye affected and spoke of the present method of using hard tubes and protecting the eye from burning. The doctor had never had a case of pemphigus but should he have he would send it to Dr. Bane.

Mydriasis, Dislocation of the Lens and Increased Tension from Trauma.

This boy, age 12, was shown by Dr. E. E. McKeown, Denver. Three weeks before had been struck above the external canthus with a brick. First two weeks had been treated at home. There had been no pain in the eye until two days before he had consulted the doctor, one week ago. When first seen there was circumcorneal injection, cornea slightly cloudy and to some extent anaesthetic. Pupil irregularly dilated; iridodonesis, with dislocation of the lens outward. Fundus details could not be made out because of haziness of the vitreous. Tension 56mm. Hg. Instillation of ¼ of 1% eserin reduced tension to 40mm. Hg. the first day, but this was suspended because of continuous pain and the instillation of a 1% atropine, with hot fomentations substituted. What is best to do for the condition now present?

DISCUSSION. Dr. Edward Jackson said that the lens might become cataractous; that it might be well to needle the margin of the lens as the eye would be much safer with the lens out of the way.

Dr. Melville Black called attention to the elevated tension and that the eye was inflamed and photophobic, and believed the eye to be a dangerous one. Thought that needling would have a tendency to increase tension and therefore was of the opinion that the lens should be removed by section. There has probably been a vitreous hemorrhage; the boy now has uveitis and unless the tension is reduced vision will be destroyed.

Dr. Jackson remarked that he would not be afraid of the increased tension in one so young as he had seen cases with tension of 50mm. Hg. come out all right.

Dr. G. L. Strader, Cheyenne, Wyo., asked why it would not be well to keep the anterior chamber open for some time?

Steel in Vitreous—Failure to Remove it with Electro-Magnet—Enucleation—Other Eye Practically Blind from Former Injury.

Dr. E. T. Boyd, Denver, presented this man with the following data. March 24th, 1915, Oscar Hill, Finlander, miner, aged 27, consulted me with reference to injury to the right eye which he had received two days before while pounding a drill. The left eye was fixing while the right was divergent and blind. There was marked conjunctival congestion and a small wound at the sclero-corneal junction internally. There was no perception of light and no further details could be made out save and except that there was no blood in the anterior chamber and there was a small wound at the periphery of the iris. Next morning an X-ray was taken which apparently located a foreign body in the vitreous, close to the sclera externally, about the center of the eye from before backwards and from above downwards. My magnet was not connected with current because of moving, so I took the case to Dr. Black's office, who very kindly assisted me in attempting to extract the foreign body. This we failed to do and the eye was removed in the afternoon. The next day Dr. Black and I bi-sected the eye and found a small piece of steel in a large blood clot in the opposite half from that in which it had been located by the plate.

Incorrect location by plate, the foreign body not being actively magnetizable, as was found later to be the case, together with the fact that it was small and incorporated in a dense blood-clot, all contributed toward failure in its removal by the magnet.

After enucleation a sphere of paraffin was inserted in tenon's capsule; this remained nicely until the fifth day the wound opened, sphere presented and was removed.

Six years ago while working in a coal mine this man was struck in the left eye by a piece of coal, as a result of which the eye was sore for two or three weeks. After the injury the eye became almost blind and divergent. There is now anterior synechia involving the pupillary margin of the lower external quadrant of the iris. There is posterior synechia of the central portion of the iris internally. Below, because of the antagonistic action of the adhesions, the pigment layer of the iris has pulled loose. Beginning a little above the horizontal meridian at the pupillary margin there is a dense white band which runs downward and outward and is connected with the anterior synechia by mediation of the loosened pigment layer of the iris. In the pupillary area there is a delicate tracery, veil like in appearance, occupying different planes from the surface of the iris, showing that though much of the lens matter may have been absorbed, there is still some remaining. Good reflex but no details can be obtained from fundus. Perception and projection are good in all the field and the man can recognize form at the distance of three feet.

DISCUSSION. Dr. Edward Jackson thought that it would be proper to try to divide the masses in the pupil.

Dr. Melville Black said that something in the way of needling was the thing to do.

Dr. W. C. Bane thought that the procedure along the line suggested should be followed, but said that he would caution the patient that he must assume all responsibility as to the ultimate result.

Dr. E. R. Neeper reported an unusual case, of a man who had consulted him two weeks before with a large, clean-cut ulcer of the cornea. He had been treated by a general practitioner. The ulcer was about 3x7 or 8mm. Iodine locally and iron internally caused rapid healing. The man had had no pain while the ulcer existed but as healing took place the eye became painful, and when the cornea no longer stained, the pain was violent almost to the point of being unbearable. The doctor denuded the area formerly ulcerated and the pain ceased. Denuded surface quickly healed and the pain became excruciating. This cycle had occurred three times, the cornea was now covered by epithelium and the pain violent. Dr. Neeper attributed the pain to involvement of the nerve terminals, but wanted suggestions as to what should be done.

Dr. C. E. Walker had had a similar case in which bandaging was the only thing that gave relief.

Dr. W. C. Bane suggested that the ulcer be cleaned out with a spud.

Dr. G. L. Strader recommended that trichloracetic acid be applied.

Dr. J. A. Patterson, Colorado Springs, reported the case of a man who in attempting to make his watch run, released the main spring in such way that he received a severe cut of the cornea, and pointed this moral, that it were sometimes better to consult a watch maker.

Dr. E. R. Neeper cited the case of an active woman, aged 62, showing arterio-sclerosis with blood pressure of 182, urine negative, whom he had referred to an internist, and the pressure was now 162mm. Hg. Should the pressure be still further reduced?

It was the consensus of opinion that the pressure should not be further reduced.

E. T. Boyd,
Secretary.

COLORADO OPHTHALMOLOGICAL SOCIETY.

DR. E. E. McKEOWN, PRESIDING.

March 20th, 1915.

Dr. Edward Jackson, Denver, stated that he was in receipt of letter from Dr. Julius Hirschberg, in which he said that he had completed his book on "American Ophthalmologists" and that he would be pleased to inscribe same "To the Colorado Ophthalmological Society." The Society appreciated the honor, coming as it does from our esteemed Honorary Member, and deputized Dr. Jackson to convey to Dr. Hirschberg our sense of appreciation and acceptance.

Macular Lesions.

Dr. Melville Black, Denver, presented a man, age 76, good habits, neither drinks nor uses tobacco. Has mitral lesion. Blood pressure 150 mm. Hg. R. E. V. 10/200; L. E. V. 20/70. The doctor did not find enough apparent trouble to account for lowered vision.

Dr. Edward Jackson thought he found distinct, though minute, lesions of the macula of each eye. Choroidal vessels show clearly which renders macular changes more difficult to see, but he feels quite sure that they are there.

Dr. G. F. Libby, Denver, regards the condition as that of senile changes in the maculae.

Dr. W. C. Bane, Denver; there seems to be disappearance of the pigment epithelium. Discs look atrophic and he believed such was the process.

Dr. E. R. Neeper, Colorado Springs: I believe that we are inclined to take advantage of "senile changes" and use the expression much as we do the term "idiopathic" to cover our ignorance. I believe that all such cases should be thoroughly worked out. Dr. Black stated that all laboratory investigation had been made.

Iritis with Optic Neuritis.

Dr. Melville Black also presented this case, a man of 35, who one year ago seriously injured left eye by steel; eye recovered but is practically blind. Seven months ago contracted syphilis and was treated with mercury. One month ago vision of right eye began to fail. Examination revealed posterior synechia which under atropine gave way in three days, and pupil is now about half dilated. When first seen the eye was not congested but later became so. Optic nerve was found to be swollen with the veins three times their normal size. Eighty grains of atophan have been given every other day for the past two weeks and the patient has been on mercury by inunction; no improvement for the past week.

The case is one for differential diagnosis, as the question naturally arises whether this is of specific or sympathetic origin; my opinion is that it is the former.

Since the meeting the patient has been placed upon one teaspoonful of sat. sol. K. I. three times a day, and this with the inunctions have caused the pain to cease and brought about great improvement in the whole condition.

Dr. Edward Jackson said that it looked to him like a syphilitic trouble. He mentioned a case in which there had been iritis and neuritis co-existent.

Dr. E. R. Neeper suggested that another Wassermann be made and Dr. E. M. Marbourg, Colorado Springs, suggested that another luetin be made.

Lowered Vision. Hazy Vitreous.

Dr. W. F. Matson, Denver, presented a man, aged 66. R. E. V. 20/120; L. E. V. 20/100. No serious illness, and no external eye disease. Present trouble began four years ago with blurred vision. Later, headache began to occur, this is now severe and of the occipital type. Pupils are not circular. No synechiae. Fundus details not clear. Urinalysis negative. Blood pressure 150 mm. Hg. Not improved by glasses.

Dr. Melville Black said that it was rather an obscure case. Vitreous is hazy and it is to this that he would attribute the reduced vision. There is slight excavation of the nerve heads. Suggested that the patient be taken off K. I. and given protoiodide for a time and then resume K. I.

Dr. W. C. Bane said that he got a good view of the discs, slight cupping but no atrophy. Wavy appearance of the cornea suggested that cocaine had been instilled, but none had.

Dr. E. R. Neeper asked how the tension was. Dr. Matson replied that it was normal.

Congenital Ptosis.

Dr. G. F. Libby, Denver, presented a man 21 with congenital ptosis and palsies of the external muscles of the eyes; nystagmus. In attempting to elevate the eyes the right goes higher and there is excessive convergence. R. E. V. 5/12 plus 1.50 Sph.; L. E. V. 5/8 plus 1.50 Sph.

Patient is the only one of five brothers who has bad eyes. Of two sisters, one has worn glasses.

Specific Iritis.

Dr. W. C. Bane, Denver, presented a man 29 years of age. Inflammation of right eye began March 6th, at which time the vision of each eye was 5/5. Pupil of left eye adherent at the lower margin. Later, circumcorneal injection increased and vision dropped to 5/10 in the right eye and 5/7½ in the left eye. Wassermann negative; denies infection. Treatment consisted of atropine, aspirin, protoiodide and hot fomentations, under which rapid recovery is taking place.

Dr. Melville Black said that notwithstanding the denial of the patient, he believed it to be specific.

Retinal Hemorrhages.

Dr. Black reported the case of a man age 29, a Wyoming ranchman, big and strong, and apparently in the best of health, who had been having headaches, and who came to him for glasses. Ophthalmoscopic examination revealed numerous small retinal hemorrhages with some spots showing that former hemorrhages had undergone absorption. Vision 20/70 in each eye; blood pressure 220 mm. Hg. Sent the man to an internist who reported the finding of albumen, hyaline and granular casts. The man had had scarlet fever ten years before which was probably the origin of his present kidney trouble.

My object in reporting this case is to observe that had this man consulted an optician, his serious condition would have probably remained unrecognized until too late to do the little that can now be done.

Neuro-Retinitis.

Dr. Black also reported the case of a girl of 18 who had had to give up house work because of violent headaches. Neuro-retinitis was found. This case is of interest because of the age of the patient and the probable prognosis, which at best, is bad.

Dr. E. R. Neeper cited the case of a healthy looking young man in whom he had found the eye grounds in similar condition.

Subconjunctival Hemorrhage.

Dr. W. A. Sedwick, Denver, reported the case of a woman, aged 48, with large subconjunctival hemorrhages, which seemed to increase at night and decrease during the day, and gradually involved one-half the sclera. Diastolic pressure 216, systolic 240 mm. Hg. Gave chloral 4 grs. t. i. d. After the sixth day this was reduced to one dose a day, and then gave ʒ ii syr. hydriodic acid three times a day. March 13th the diastolic and systolic pressures were 164 and 190 mm. Hg., respectively.

Papillomata.

Dr. E. T. Boyd, Denver. The patient whose case I am about to report promised faithfully to be present tonight, and because of the rarity of the condition, only about fifty cases having been reported, I regret her failure to keep her promise.

A woman, 54 years old, consulted me March 13th with regard to the condition of her eyes which were running water and causing her much mental anguish because of their unsightly appearance. On the margin of the right lower lid there were two large papillomata, their bases merging and a large papilloma at the inner corner of the right upper lid. In the inner corner of the left eye, arising from the caruncle, there was a large papilloma and it was this one in particular that was giving her the most trouble.

Two years ago being troubled with constipation and hemorrhoids, at the suggestion of a friend, she began using injections of salt and water, using according to her statement "salt by the handfuls." This she did once or twice a day for a long period of time; her mouth began to trouble her and she consulted a dentist whom she quickly quit and was then treated by a Christian Science Healer. Ten months ago papillomata began to appear on the extensor surfaces of the forearms and to a lesser extent upon the arms, and in great profusion upon the back of her neck and in the latter place there is now marked pigmentation. There is now a papilloma in one external auditory canal and a mass, probably papillomatous, in the roof of the mouth well forward and flush with the biting surface of the teeth that has the appearance of fine grained granulation tissue. She has lost thirty pounds in the last ten months and is in a deplorably despondent mental state, so it is difficult to say whether this loss and her cachectic appearance is entirely due to a cancerous lesion or largely the result of mental worry.

Though this is not a frank, outspoken case, it should be diagnosed, following Crocker's classification, as Keratosis Nigricans, or following Stelwagon, edition of 1914, as Acanthosis Nigricans.

Speaking of this disease, Couilland, under the supervision of Darier arrives at the following conclusions: "The disease is a syndrome dependent upon abdominal carcinosis and characterized (I) from a clinical viewpoint, by (1) a papillary hypertrophy and a cutaneous pigmentation having an essential regional character; (2) papillary hypertrophy of the mucous membrane; (3) dystrophy of the hair and nails; (4) absence of desquamation; (5) existence of cachexia. (II) From a pathologic standpoint, by carcinomatous degeneration of the abdominal organs. (III) Histologically, by lesions of hypertrophy and pigmentation in the rete and corium."

Mark Delimon Stevenson. Born at Trafalgar, Ontario, Canada, in 1876, Dr. Stevenson received his medical degree at the Rush Medical College, Chicago, in 1897. After a course at the Royal London Ophthalmic Hospital, he settled, in 1900, at Akron, where he practiced until his death. For ten years he was associated in practice with Dr. E. M. Weaver.

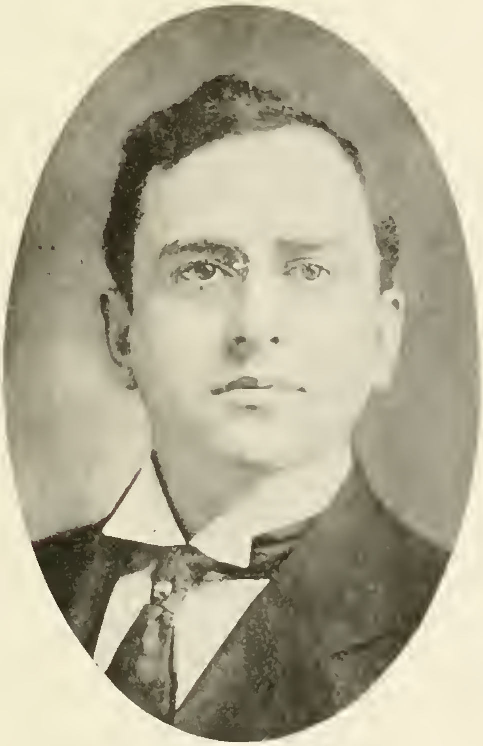
Dr. Stevenson was oculist at the Akron City Hospital, and at the People's Hospital, and was oculist and aurist at the Children's Hospital. In 1911 he established, on East Market Street, Akron, a private hospital, which he conducted with great success until his decease.

He was a Member of the American Medical Association, and a Fellow of the American College of Surgeons. A frequent contributor to medical journals, he was also one of the collaborators on "Ophthalmology."

He married, in January, 1915, Miss Martha von Novelley, of Vienna, daughter of a famous Austrian civil engineer.

Dr. Stevenson came to his death very unexpectedly. While he was preparing to perform an operation, he sent the nail file too deeply beneath his left thumb nail. During the operation, the tiny scratch became infected, and, though all was done that lay in human power to save the doctor's life, he passed away, May 22, 1915, aged only 39.

T. H. S.



Mark Delimon Stevenson, 1876-1915.

EDUCATION OF BRITISH AND BELGIAN WAR-BLINDED SOLDIERS AND SAILORS.

Mr. C. Arthur Pearson, Chairman of the Blinded Soldiers and Sailors' Care Committee, of London, England, gives an account of one of their Hostels established at the residence of Mr. Otto Kahn (loaned for the purpose by the owner) near Regent's Park, and maintained jointly by the British Red Cross, the Order of St. John of Jerusalem, and the National Institute for the Blind. The grounds and the house itself are fitted with special walks, paths, and ingenious signals so that the recently blind individual may walk about with ease. Each inmate spends two hours a day at Braille, reading, writing and learning to use the ordinary typewriter. Two hours or more are consumed in learning some useful and profitable occupation.

A large conservatory has been turned into a workshop, and here the classes in carpentry, boot repairing, basketmaking and matmaking work busily under the instruction of skilled blind teachers.

The country life section, which is under the supervision of Captain Webber, the well known blind expert, is a most interesting feature. Instruction is given in all branches of poultry farming, in bee keeping and in market gardening, and there are many simple and clever plans to enable the blind men to pursue these avocations with accuracy and ease. Several fellows are learning massage, the one occupation at which blind people can compete on even terms with people who can see; indeed, the skilled blind man is very apt to take the lead in this occupation.

NEW BOOKS.

Squint: Its Causes, Pathology and Treatment, by Claud Worth, F. R. C. S. Surgeon to the Royal London Ophthalmic Hospital (Moorfields); Consulting Ophthalmic Surgeon to the West Ham and East London Hospital. Fourth edition, 247 pages. Price cloth 6/- net. London: John Bale, Sons & Danielson, Ltd., 83-91 Great Titchfield Street, Oxford Street, W. 1915.

NEWS AND NOTES.

Personals and items of interest should be sent to Dr. Emory Hill, 30 North Michigan avenue, Chicago, Ill.

As these columns go to press on the 15th of the month previous to publication, contributors will kindly send in their items before that date.

Dr. Douglas A. Payne has been elected councilor of the Chicago Medical Society.

The Maine Eye and Ear Infirmary has received a large bequest by the will of the late J. R. Martin of Portland.

Dr. Roy T. Urquhart, of Grand Rapids, has been appointed oculist to the Michigan Railway Co.

Dr. Charles M. Robertson of Chicago was married on June 3rd to Miss Mary Van Houten.

Dr. John A. Donovan of Butte, Montana, has returned home after a twenty-day trip bear hunting in the Wyoming mountains.

A portrait of the late Dr. Joseph Aub has been hung in the reception room of the Cincinnati General Hospital.

Dr. C. A. Veasey of Seattle, Washington has returned to his work after a prolonged absence occasioned by severe injuries sustained in an automobile accident.

The New York City Board of Health reports that more than one-third of the toilet preparations sold in that city contain wood alcohol. This is in violation of the sanitary code and is being opposed by the Board.

"Lighthouses," or homes for blind soldiers, are being established in the belligerent countries of Europe. Joseph H. Choate heads the executive committee of the organization. It is reported that there are 5,000 blind soldiers in Paris alone.

Dr. W. C. Small of Waterloo has been elected president and Dr. Harvey B. Gratiot of Dubuque, vice-president of the Iowa State Medical Society.

The annual meeting of the Mid-West Academy of Ophthalmology and Oto-Laryngology was held at Joplin, Mo., under the presidency of Dr. John D. Pifer of that city, on May 24.

Dr. and Mrs. Lippincott, formerly of Pittsburgh, Pa., have spent most of the past ten years abroad, living during that period chiefly in Rome and on the Riviera. Recently, after a residence of some years in Nice, he has qualified to practice in the Principality of Monaco, and will henceforth have an office in Monte Carlo.

The Sanitary Bulletin published monthly by the Buffalo Department of Health gives due consideration to eye topics. A recent issue discusses preventable blindness especially among children, and gives some axioms of the squint problem in regard to early correction of errors of refraction.

Professor J. Stilling of Strassburg is dead at the age of 73. His work on color blindness and tables for testing color vision used extensively in Germany and elsewhere, and his contributions to the subjects of the etiology of glaucoma and myopia, have made Stilling's a well known name throughout the ophthalmic world for many years.

The following deaths of ophthalmologists are announced:
Edward S. Peck of New York.
John R. McIntosh of St. John, New Brunswick, aged 53.
Albert S. Core of Mendota, Ill., aged 65.
Edward E. Hazlett of Abilene, Kans., aged 63.

Dr. Edward L. Meierhof of New York advises for the cure of pediculosis ciliaris the use of a ten-volume strength of peroxide of hydrogen to be swabbed on the lashes, followed by the passage of roller forceps, as used in trachoma, over the lashes, thus rapidly killing and removing the nits. This limited use of peroxide has no bleaching effect upon the lashes.

At the forthcoming meeting of the Clinical Congress of Surgeons of North America in Boston in October the following eye clinics are announced:

Massachusetts General Hospital, daily.

Children's Hospital, ward visits daily at 10 A. M.

Massachusetts Homeopathic Hospital, daily at 9 A. M.

New England Hospital for Women and Children, daily at 2.

Massachusetts Eye and Ear Infirmary, daily from 9 to 12.

The following appointments of ophthalmologists are announced:

Harold P. Goldberg, ophthalmologist to the Episcopal Hospital, Philadelphia.

Ward A. Holden, professor of ophthalmology in Columbia University, New York.

John B. Ellis and Francis Lane, assistant professors of ophthalmology in Rush Medical College, Chicago.

Emory Hill, associate in ophthalmology in Rush Medical College, Chicago.

Hugh Folsom and Major H. Worthington, assistants in ophthalmology in Rush Medical College, Chicago.

A gratifying feature of the program of the American Academy of Ophthalmology and Oto-Laryngology at the last meeting was the attention given to the question of refraction. Dr. Newcomb of Indianapolis considered the lessons drawn from a study of 1,500 cases. He emphasizes the importance of careful examination of children and supervision of their school work, which he thinks should begin at eight years of age rather than at six or seven years. The relation between eye defects and mental and physical development of school children he thinks clear. Dr. Hiram Woods of Baltimore discusses a number of practical questions of securing comfort to patients who wear glasses, questions outside the range of the text-books and not available to the average practitioner unless the societies consider them.

At the recent meeting of the American Ophthalmological Society the following officers and committees were chosen: president, Dr. George E. deSchweinitz of Philadelphia; vice-president, Dr. Peter A. Callan of New York; secretary-treasurer, Dr. W. W. Sweet of Philadelphia. Councilors, Dr. W. H. Wilmer of Washington, Dr. Richard A. Reeve of Toronto, Dr. Alexander Quackenbos of Boston, Dr. Arnold Knapp of New York and Dr. William Zentmayer of Philadelphia. Committee on theses: Dr. W. H. Wilder of Chicago, Dr. Alexander Duane of New York and Dr. George Derby of Boston.

A recent census of the blind, made in civilized countries of the world, shows that Belgium has the lowest percentage of blind persons. Canada is next higher in the list. Then comes The Netherlands, Saxony and New Zealand. Egypt, as might be expected, shows the highest percentage of blind population in the world.

It is proposed in the interest of standardized training in ophthalmology to establish an examining board which shall pass upon the qualifications of prospective ophthalmologists. Successful candidates are to receive a diploma but no academic degree. After the year 1920, such a diploma will be required for admission to the chief ophthalmological societies. The committee chosen to represent the American Ophthalmological Society, the American Academy and the section on ophthalmology of the American Medical Association consists of Drs. deSchweinitz, Risley, Zentmayer and Reber of Philadelphia, Drs. Standish and Lancaster of Boston, Drs. Weeks and Duane of New York, Dr. Wilder of Chicago, Dr. Woods of Baltimore, Dr. Parker of Detroit, and Dr. Jackson of Denver.

From Vienna is reported a great increase in cases of nyctalopia among soldiers. The condition seems to be of temporary duration, recovery following return to normal life after release from service. Possek writes in the Wiener Klinische Wochenschrift of eye injuries. Explosions of shrapnel and bombs cause the majority of wounds, stab wounds being rare. When particles of sand or shot become embedded without penetrating into the eye the prognosis is good though infection may cause extensive corneal damage. Conservative treatment is indicated.

When foreign bodies penetrate the eye the prognosis is much worse. Such particles are frequently non-magnetic and may be too small for distinct localization by the X-ray. The danger of sympathetic ophthalmia is great and enucleation is the choice procedure. Darier of Paris comments on the increase of eye injuries since the fighting has been at very close quarters in the trenches. He urges special tags for cases of eye injury so that they may be hurried to eye specialists. He also suggests tetanus antitoxin when there is much destruction of tissue.

The meeting of the Eye, Ear, Nose and Throat section of the Illinois State Medical Society was held in Springfield, May 18 and 19. There was a large attendance and a very successful meeting. The first day was devoted to operative clinics and an enormous amount of material had been gathered together for operation by surgeons from various parts of the state. There were 29 cataract operations, 7 operations for glaucoma, 3 for dacryocystitis, 2 labyrinthine operations, 1 cleft palate, 3 hare-lip, 1 plastic on the nose, 4 radical mastoids, 4 septum operations, 3 operations for neuralgia, 5 for ethmoidal disease, 3 frontal sinus disease, 10 tonsils and adenoids, 2 bronchoscopies.

In addition the following cases were exhibited: 2 glaucoma cases drained by gold horse-shoe in trephine opening, 2 evisceration, 2 intranasal frontal sinus rasp operations, 1 carbonic snow treatment for trachoma. Such a mass of material has probably never before been collected for such a meeting and the thanks of the section were voted to Dr. Arthur Prince and Dr. Bullard, to whose efforts the success of the clinic was chiefly due.

Dr. E. E. Holt of Portland has been elected president of the Medical Society of Maine.

CHICAGO EYE CLINICS.

Hour.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
9 A.M.	Richard S. Pattillo (P.-G.) G. W. Mahoney (Poli.) R. B. Stephenson (P.-G.) Carl Wagner (E.E.N.T.)	*Geo. F. Suker (P.-G.) C. H. Francis (Poli.) A. Duncan (P.-G.) A. G. Wippern (E.E.N.T.)	W. F. Coleman (P.-G.) S. M. Hager (Poli.) H. N. Lyon (P.-G.) Carl Wagner (E.E.N.T.)	G. W. Mahoney (Poli.) Rich'd S. Pattillo (P.-G.) R. B. Stephenson (P.-G.) A. G. Wippern (E.E.N.T.)	C. H. Francis (Poli.) R. B. Stephenson (P.-G.) J. A. Cavanaugh (E. E. N. T.)	S. M. Hager (Poli.) C. W. Hawley (P.-G.) H. J. Morlan (P.-G.) A. G. Wippern (E.E.N.T.)
10 A.M.	Brown Pusey (N.W.U.) Geo. T. Jordan (N.W.U.) Robert Blue (N.W.U.) Every day, 10-12 A. M. Harry Gradle (E.E.N.T.)	J. R. Hoffman (E.E.N.T.)	Harry Gradle (E.E.N.T.)	J. R. Hoffman (E.E.N.T.)	Harry Gradle (E.E.N.T.)	J. R. Hoffman (E.E.N.T.)
1 P.M	M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) Emily Selby (Inf.) *H. W. Woodruff (Inf.) *Oscar Dodd (Inf.) C. A. Leenheer (Inf.) D. W. Eiss (Inf.) E. R. Cressley (Inf.) C. C. Clement (Inf.) E. V. L. Brown (County) and Geo. F. Suker (County) Daily, 2-30 P. M. W. A. Fisher (E.E.N.T.)	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) E. K. Findlay (Inf.) Wm. E. Gamble (Inf.) J. B. Loring (Inf.) S. L. McCreight (C.C.S.) Robt. Von der Heydt (Inf.) L. G. Hoffmann (Inf.) A. P. Hunneman (Inf.) M. Goldenberg (Inf.) Francis Lane (Inf.) H. Walker (Inf.) W. A. Fisher (E.E.N.T.)	M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) Emily Selby (Inf.) *H. W. Woodruff (Inf. *Oscar Dodd (Inf.) C. A. Leenheer (Inf.) D. W. Eiss (Inf.) E. R. Cressley (Inf.) C. C. Clement (Inf.) Oliver Tydings (E. E. N. T.)	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) *Frank Allport (St. Luke's) *Frank Brawley (St. Luke's) E. K. Findlay (Inf.) Wm. E. Gamble (Inf.) *Paul Guilford (St. Luke's) *Casey Wood (St. Luke's) *T. A. Woodruff (St. Luke's) J. B. Loring, (Inf.) S. L. McCreight (C.C.S.) Robt. Von der Heydt (Inf.) L. G. Hoffman (Inf.) A. P. Hunneman (Inf.) M. Goldenberg (Inf.) Francis Lane (Inf.) H. Walker (Inf.) W. A. Fisher (E.E.N.T.)	M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) Emily Selby (Inf.) *Oscar Dodd (Inf.) C. A. Leenheer (Inf.) D. W. Eiss (Inf.) E. R. Cressley (Inf.) C. C. Clement (Inf.) H. W. Woodruff (Inf.) W. A. Fisher (E.E.N.T.)	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) E. K. Findlay (Inf.) Wm. E. Gamble (Inf.) J. B. Loring (Inf.) S. L. McCreight (C.C.S.) Robt. Von der Heydt (Inf.) L. G. Hoffman (Inf.) A. P. Hunneman (Inf.) M. Goldenberg (Inf.) Francis Lane (Inf.) H. Walker (Inf.) Oliver Tydings (E. E. N. T.)
3 P.M.	*Wm. E. Gamble (U. of I.) Wm. H. Wilder (Rush) H. S. Gradle Daily 3-5 (E. M. D.)	R. J. Tivnen (M. H.)	W. Allen Barr (C.C.S.) *Wm. E. Gamble (U. of I.)	Wm. H. Wilder (Rush) R. J. Tivnen (M. H.)	W. Allen Barr (C.C.S.)	Geo. F. Suker (P. G.) 2-5 H. Cuthbertson A. Duncan
4 P.M.	W. F. Coleman (P.-G.) H. N. Lyon (P.-G.) 2-5	C. W. Hawley (P.-G.) 2-5 J. F. Campbell (P.-G.) H. J. Morlan (P.-G.)	J. B. Loring (U. of I.) E. K. Findlay (U. of I.) G. F. Suker (P.-G.) 2-5 H. Cuthbertson (P.-G.)	C. W. Hawley (P.-G.) J. F. Campbell (P.-G.) H. J. Morlan (P.-G.)	W. F. Coleman (P.-G.) 2-5 H. N. Lyon (P.-G.)	

*Special operative eye clinic.

ABBREVIATIONS:

C. C. S.: Chicago Clinical School, 1844 W. Harrison Street.

E. M. D.: Emanuel Mandel Dispensary, 1012 Maxwell St.

County: Cook County Hospital, W. Harrison and Honore Streets.

Inf.: Illinois Charitable Eye and Ear Infirmary, Peoria and Adams Streets.

M. H.: Mercy Hospital.

Poli.: Chicago Policlinic and Hospital, 221 W. Chicago Avenue.

P.-G.: Post-Graduate Medical School of Chicago, 2400 Dearborn Street.

N. W. U.: Northwestern University, 2431 Dearborn Street.

Rush: Rush Medical College, W. Harrison and Wood Streets.

St. Luke's: St. Luke's Hospital, 1416 Indiana Avenue.

U. of I.: College of Medicine, University of Illinois, Congress and Lincoln Streets.

THE
OPHTHALMIC RECORD
A MONTHLY REVIEW OF THE PROGRESS
OF OPHTHALMOLOGY

Vol. XXIV CHICAGO, SEPTEMBER, 1915 No. 9, New Series

ORIGINAL ARTICLES

THE PREVENTIVE AND CURATIVE TREATMENT OF PNEUMOCOCCAL ULCER OF THE CORNEA.

BY

A. MAITLAND RAMSAY, M. D., F. F. P. S.

OPHTHALMIC SURGEON, GLASGOW ROYAL INFIRMARY; LECTURER ON THE EYE, UNIVERSITY OF GLASGOW.

The patient, whose case forms the subject of this lecture, is a miner 56 years of age, who was injured while at work, by "a spark from the pick" striking his left eye. The accident happened on the 28th of April, 1914, but it was ten days later before he came to the Ophthalmic Department of the Glasgow Royal Infirmary. He said such accidents were of daily occurrence in the colliery, and consequently when he was hurt he thought little about the matter, but continued at work, in spite of the fact that the eye gradually got more and more uncomfortable, watered freely, and was very intolerant of light. By the end of the second day, however, the suffering was so great that he was compelled to desist. From this time onwards the pain steadily increased, darted from the eye to the top and the back of his head, and at length became so severe and interfered so much with rest and sleep that he was forced to consult a doctor, who advised him to seek expert advice at an eye dispensary without further delay.

When he was examined it was found that there were signs of blenorrhoea of the left lachrymal sac, the upper lid was slightly swollen, the superficial and deep vessels were both greatly congested, and the whole bulbar conjunctiva was red and oedematous. An ulcer, presenting very characteristic features, had formed on the cornea opposite the pupil. It was somewhat crescentic in shape, and while its floor showed only a shallow sloping depression, rough and glistening, its margins were opaque, raised, undermined, and suppurating. At the first glance the cornea, as a whole, appeared transparent, but on more careful examination thin grey lines were seen radiating from the most densely infiltrated border of the ulcer and passing for a greater or less distance into the substantia propria. Where infiltration was greatest it was evident that the ulcer was spreading, while in the margin opposite there were signs of cicatrisation. Spots of inflammatory exudate were seen in Descemet's membrane, and a considerable hypopyon occupied the most dependent part of the aqueous chamber. The pupil was contracted and irregular in outline, and the iris was discolored and acutely inflamed. As the diagnosis could not be completed without a bacteriological examination a smear was taken from beneath the spreading edge of the ulcer, prepared on a cover glass, stained by Gram's method, and examined under the microscope, when pneumococci were found in great numbers.

The case is typical of many: a workman receives an eye injury which in itself is trivial, but which through neglect is allowed to become serious owing to the abraded surface of the cornea becoming infected by pneumococci from the tear passages and the conjunctival sac.

In this disease neglect is specially dangerous, because spontaneous recovery rarely takes place; on the contrary the micro-organisms spread rapidly between the superficial lamellae, and the ulcer creeps over the whole surface of the cornea. As it increases in size the floor bulges, and may become so thin that Descemet's membrane projects. In more severe cases the whole epithelium and the substantia propria are destroyed, and only the more resistant posterior layer remains. When at length perforation of this takes place, the pneumococci gain access to the interior of the globe. If they propagate in the uveal tract and in the vitreous, intense inflammation is set up and may involve every tissue of the eye-ball. Happily, owing to improved methods of treatment, panophthalmitis is not nowadays a common sequel to hypopyon ulcer; but whenever the cornea is extensively destroyed, and especially if perforation and prolapse of the iris have occurred, secondary glaucoma, or partial of complete anterior staphyloma frequently follows.

The prognosis of serpiginous ulcer is at all times serious. Even a mild case requires several weeks to heal, and as the formation of fibrous tissue always follows inflammation which has caused partial necrosis, a cicatrix is inevitable, the whiteness and the density of the scar depending upon the depth of the destruction of the cornea. As the leucoma is usually situated in front of the pupil, sight is seriously impaired, and can only be imperfectly restored by operation.

The majority of the patients suffer during the most active period of their working life, and as many of them are rendered wholly or partially unfit for their ordinary work, the disease has considerable economic importance. It is difficult to estimate the loss in wages arising from inability to work during the period of illness and from diminished earning power afterwards, but the sum paid in settlement of claims for compensation is more easily calculated. An insurance manager has told me that in the company with which he is connected, serpiginous ulcers of the cornea form from 3% to 4% of all non-fatal underground accidents, and the amount actually paid in compensation for these injuries alone in a single year is little short of three thousand pounds. It is unfortunate that the pecuniary alleviation afforded by the Workmen's Compensation Act tends to make many workmen satisfied with diminished earning ability and content to bear considerable physical inconvenience. Much of the money could be saved, and what is of more importance, much of the suffering and hardship avoided, if all trivial injuries to the eye were skillfully treated at the time of their occurrence.

The treatment of pneumococcal ulcer of the cornea is, like that of all other diseases due to infection, both preventive and curative.

1. *Preventive Treatment*:—It must never be forgotten that the pneumococcus which is the cause of the ulcer is, when it attacks the eye, as destructive to sight as it is dangerous to life when it invades the lung. Whenever it has declared itself, therefore, expert assistance becomes at once necessary. Prophylaxis is, however, a different matter, and lies almost entirely in the hands of the general practitioner who, if well informed as to the ætiology of the disease, will fully realize his own special responsibility in the matter, and recognize the importance of the following recommendations.

a. Suppuration of the tear passages is a frequent source of infection of an abraded cornea, therefore the general practitioner should advise immediate extirpation of the lachrymal sac in all patients suffering from dacryocystitis if their occupation exposes them frequently to risk of injury to the eye.

b. The chief sufferers from serpiginous ulcer belong to the laboring classes, who are very prone to neglect slight eye injuries, therefore the general practitioner should do all in his power to warn people of this class of the dangers arising from neglect, and try to teach them to seek medical advice with as little delay as possible. It is most important that all workmen be made to understand the serious nature of pneumococcal ulcer, and much good in that direction might be accomplished if, in the Ambulance lectures delivered to the employees of public works, the lecturer gave some general instructions regarding the care of the eyes, and warned the men that no injury to the eye is so trivial that it can be neglected with impunity.

c. After infection has occurred the ulcer may spread with great rapidity, and all chance of saving sight be lost within a few days. Whenever, therefore, the general practitioner is consulted by a patient suffering from serpiginous ulcer he should restrict himself to giving first aid, and then with as little delay as possible send the patient to a specialist. First aid in such a case consists in washing out the conjunctival sac with a warm solution of boracic acid, instilling a few drops of a 2% solution of cocaine, examining the eye carefully by focal illumination, removing any foreign body from beneath the eyelids or from the surface of the cornea, applying an ointment of 1% atropine. 2% cocaine and 3% iodoform, and covering the eye with a carefully adjusted compress and bandage. The patient ought then to be sent to a specialist, for it cannot be repeated too often, or urged too strongly that the sooner the eye is treated by an expert the more satisfactory will be the result. When left to themselves, the patients rarely seek the advice of an ophthalmic surgeon until days or possibly weeks after the onset of the disease, and by that time sight may be irreparably damaged. It is true that many of these patients say that in the interval they have been using a lotion (which may or may not have been prescribed by a doctor), but that cannot in any way be regarded as efficient treatment of such a dangerous disease as serpiginous ulcer.

2. *Curative Treatment:*—When the patient passes to the expert a bacteriological examination ought at once to be made to confirm the diagnosis, and the tear passages should be examined carefully so that if any suppuration be detected treatment may be begun by syringing, and it may be by extirpating the lachrymal sac. When the diagnosis has been established and the risk of reinfection from dacryocystitis prevented the

indications for further treatment are to give the eye complete rest, to relieve the pain, to destroy the infecting micro-organisms, to protect the eye from further injury, and to promote the rapid healing of the ulcer.

The patient ought to remain in bed with all bright light excluded from the room, and atropine must be instilled from the very outset. Locally it soothes the nerves and diminishes vascular congestion, while by dilating the pupil and paralysing the ciliary muscle it insures physiological rest for the eye. The effect of atropine upon the pupil is one of the surest guides in prognosis, for the more quickly the iris responds to the influence of the mydriatic the more favorable will be the course of the disease. When the ulcer is about to perforate the use of eserine is preferable to that of atropine, but with that exception the former drug has in serpiginous ulcer a very limited sphere of usefulness and almost invariably it is the latter which should be employed. Great benefit is obtained from the application of fomentations. Moist heat by diminishing congestion, and thereby reducing intraocular tension, speedily relieves pain; but a fomentation to be effective must be properly applied, and it should be repeated every two or three hours. It may be made more soothing by using an infusion of chamomile flowers to a pint of which may be added a teaspoonful of Battley's sedative solution of opium.

The chief end of treatment, however, is to compass the destruction of the pneumococci in the substance of the cornea. Many antiseptics have been recommended for that purpose, pure phenol, tincture of iodine, bichloride of mercury, and sulphate or chloride of zinc being the most popular. The ordinary antiseptic, however, expends its energy upon every form of protoplasm with which it comes in contact, and consequently may be as destructive to the tissue of the cornea as it is to the invading microbes. For that reason treatment in infective diseases of the eye aims not so much at killing the bacteria directly as at stimulating the natural defences of the body. Phagocytosis, however, depends in great measure on the supply of protective substances the tissue is able to produce, and although the cornea does share to some extent in the general immunity of the body, it is an avascular structure, and consequently the destruction of the germs attacking it, is neither so rapid nor so thorough as in other tissues possessing a better blood supply. The bacteriotropic substances elaborated by the body have such restricted access to the cornea that in actual practice serum and vaccine therapy can only play a subordinate part in the treatment of pneumococcal infection of that structure. Roemer, who strongly advocates specific serum and vaccine therapy, employs it only in conjunction with local remedies. He also advises that it be used at the earliest possible moment, and warns us not to expect it to work any miracle of healing.

What is wanted is a drug which is at one and the same time poisonous for the pneumococcus and non-poisonous for the tissues of the body, or, as Wright says, it must be monotropic for the protoplasm of the pneumococcus. Professor Morgenroth has recently brought forward such a drug in ethylhydrocuprein and, as Wright points out, his experiments have furnished the first demonstration of the possibility of preventing and curing a bacterial—as distinguished from a protozoal or spirochaetal infection—by the administration of a drug. Morgenroth's researches were undertaken to elucidate the pharmaco-therapy of pneumonia. He experimented with derivatives of quinine, and found that ethylhydrocuprein and its salts exerted a bactericidal influence specifically upon the pneumococcus, and had only a very slight effect upon other micro-organisms. Early in the course of his investigations he expressed the opinion that the drug ought to prove of great value in the treatment of serpiginous ulcer of the cornea, and encouraged his ophthalmic colleagues to put it to a clinical test. A. Leber, at the meeting of the Heidelberg Ophthalmological Congress of 1913, was the first to record successful results, and since his communication Goldschmidt, Schur, Darier and others have reported favorably on the drug, which from all accounts now bids fair to dominate the therapy of pneumococcal ulcer of the cornea.

Ethylhydrocuprein has been used in my practice since the autumn of 1913 and 34 cases of serpiginous ulcer have been treated. My personal experience amply confirms the favorable reports already published. Provided the pneumococcus is the infecting organism, cases treated by ethylhydrocuprein run a much shorter and conspicuously more favorable course, than did those dealt with in earlier days by the well-recognized methods formerly in use. After recovery there is only a thin cicatrix marking the site of the ulcer, and consequently either iridectomy or tattooing is much less frequently required in order to improve acuity of vision.

The technique of treatment is simple. Ethylhydrocuprein hydrochloride, also known by the trade name of optochin, a white salt readily soluble in water, is employed in 1% or 2% aqueous solution. Before it is used, the floor of the ulcer should be thoroughly washed with a lotion, containing chinosol (1 in 4,000), or quinine hydrochloride (3 grains to 1 fluid ounce), diluted with an equal quantity of warm water, and the boundaries of the ulcer should be demarcated by staining with an alkaline solution of fluorescein. This done, a swab of sterilized cotton wool, sufficiently large to cover the whole of the ulcerated surface, and saturated with a 1% aqueous solution of the optochin, should be applied to the ulcer, and kept in firm contact with its floor and margin for about two minutes. Should the patient be sensitive, it is well to instill cocaine drops beforehand, because the application of the optochin causes sharp burning pain lasting from five to ten minutes. That irritation, however, soon lessens, and by the end of fifteen minutes there is complete anaesthesia of the cornea which will last for fully half an hour. To begin with these applications should be repeated two or three times daily, the good effect being maintained by instilling a few drops of 1 per cent solution of optochin every hour during the day, while, during the night, a 1 per cent optochin and atropine ointment may be applied as often as possible without interfering with sleep. Ethylhydrocuprein is often applied by simple instillation alone, but the use of the swab and the hourly instillations combined will be found much more efficacious and satisfactory.

The grateful anaesthesia following the first application develops gradually and is kept continuous by the repetitions. Relief from pain is therefore prompt and effectual, and in two or three days the ulcer is clean, all infiltration having disappeared from its margins, the hypopyon has become absorbed and the pupil begins to dilate. After this the applications of optochin need not be so frequent, but as there is, until healing becomes thoroughly established, considerable risk of reinfection, the instillations should be continued and repeated three or four times a day until all danger is past. Fresh infection is always accompanied by recurrence of pain, and is in many instances due to carelessness either on the part of the patient himself or of those in charge of his case. Rest in bed and the careful application of a bandage until the ulcer has healed completely are essential parts of the treatment, and if, after sepsis has been overcome, these precautions be rigidly followed there will be no relapse. Rapid healing will be promoted by the protection afforded to the eye by the bandage or by a shield, and cicatrisation is hastened by the use of 5% scarlet red ointment, or by covering the ulcer, after it is thoroughly disinfected, with a flap of conjunctiva.

The success of the treatment by ethylhydrocuprein depends upon the fact that the pneumococcus is the infecting organism, and that it is possible to kill the microbe in the substance of the cornea without injury to the cornea itself. Preliminary bacteriological examination is therefore essential, because it is very difficult to distinguish by clinical signs alone a serpiginous ulcer due to the pneumococcus from one the result of infection by other micro-organisms, and as has already been said, optochin has little or no effect on microbes other than the pneumococcus. In cases of mixed infection, it is, therefore, well to apply pure phenol, or 20% solution of sulphate of zinc in addition to optochin, and this combined treatment is often attended by very satisfactory results.

It happens occasionally that healing proceeds very slowly or improvement may come to a standstill, even in a case in which the pneumococcus has been demonstrated to be the cause of the ulcer. Under such circumstances it is well to be sure that the optochin solution is freshly prepared, for the drug loses its efficacy so quickly that solutions more than a week old ought not to be employed. Leber has suggested that in some instances where the results are disappointing the pneumococci have become resistant to ethylhydrocuprein, and that is why when recrudescence takes place the relapse is not readily influenced by the treatment. Whenever, therefore, in a case that was progressing well to start with, pain and other symptoms of irritation recur and the ulcer continues to spread the actual cautery should, without delay, be applied carefully but thoroughly.

From what has been said it will be clear that the two essentials for the success of chemo-therapy in pneumococcal ulcer of the cornea are, first, the necessity for beginning treatment at the earliest possible moment, and, second, the need for intensive applications of optochin during the first few days of the treatment.

REPORT OF A CASE WITH A FOREIGN BODY LOCATED IN THE LENS.

BY

FRANCIS W. ALTER, M. D.

TOLEDO, OHIO.

Quite a number of cases of a foreign body imbedded in the lens have been reported before, they are, however, uncommon enough to justify and warrant the publication of the successful management of this rather unusual experience.

History.

Mr. K., aged 19 years, was referred to me by the master mechanic of the Penn. R. R. Co., with the history that the patient while engaged as a mechanic in the company's shops four months prior, had a piece of steel or iron fly into the right eye.

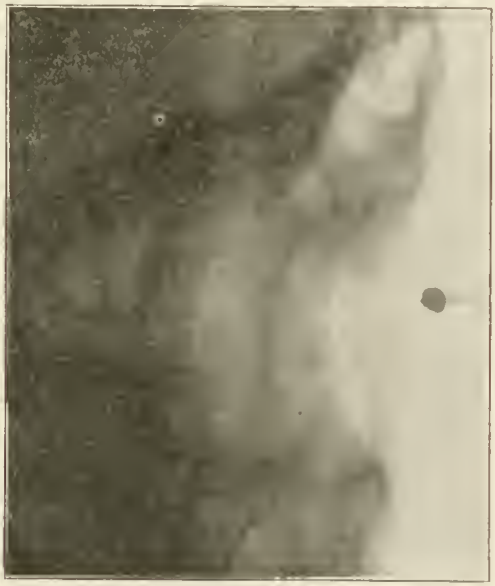


Fig. 1.—Foreign Body in Lens.

The injury was so trifling at the time that the patient did not have the eye examined by a doctor, but continued his work without interruption or loss of time for three months.

He then noticed that his vision was becoming misty and he now visited an oculist who evidently attempted to needle the lens.

For the last few weeks the patient had noticed that the vision in the injured eye had gradually become more and more foggy.

Status Praesens.

On examination I found the injured eye had only light perception and the eye appeared quiet, there being no evidence of any moment of iritis or irido-cyclitis. There was a shallow anterior chamber, the lens was flaky and opaque and in the anterior chamber there were shreds of lens fibres lying loose. There was a small opening in the lens capsule where the former inefficient needling had been done.

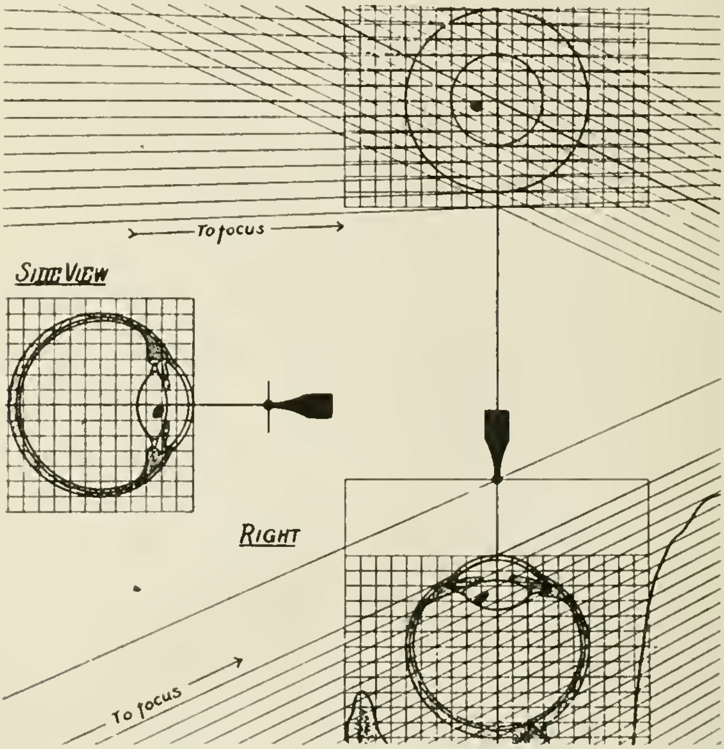


Fig. 2.—Chart for Localization of Intraocular Foreign Bodies.

Following the usual dictum, in all these cases I make it a routine practice to have a radiograph taken. The diagrams presented show the location of a small foreign body lying near the posterior capsule of the lens, and one must observe the diagram closely to realize the pin-point size of the foreign body.

The lens was removed by simple extraction and in its substance was located a foreign body which proved to be a piece of steel the size of a large pin head.

Summary.

Now, while this case is one of many similar cases which come under the care of an ophthalmic surgeon. there are several points which require special mention.

The First is the apparent insignificant nature of the eye injury.

The Second is the procedure of needling such cases, which in this case quite apart from the incomplete way this was done, was not the proper treatment under the circumstances. *The lens should be extracted.*

The Third is emphasizing the importance of a radiograph in such cases as these, because it is of vital importance to know whether an eye harbors a foreign body, and if so its minute location. Such cases require an expert Roentgenologist who can minutely localize a foreign body.

The Fourth. Where the foreign body is located in the lens, the procedure is to do an extraction and remove the lens and foreign body together. There is much less danger to the eye when this is done than when one attempts to remove the foreign body first and later perform an extraction of the lens.

PROGRESS IN THE TREATMENT OF CATARACT IN INDIA.

BY

LT. COL. HENRY SMITH, V. H. S., I. M. S.

CIVIL SURGEON, AMRITSAR, INDIA.

The accompanying table, extracted from the official records, shows the progress in the treatment of cataract in India, except in the minor provinces and native states, statistics of which I have been unable to obtain. It shows the work done in the past by the Indian Medical Service, and the work we are now doing. It was in the late seventies that cataract extraction in India came into existence. Before that time the treatment of cataract was in the hands of the immemorial indigenous lens coucher! All the progress we have made has been at his expense. The Punjab is his home. All over the Punjab we come across villages named Rawal Pindi, that is, Rawal's town; Rawal signifying the caste of lens coucher. From the Punjab at the end of the hot weather he migrates all over

India; a number of them go to Europe and return at the beginning of the following hot weather.

The statistical table does not indicate the amount of cataract in India. It indicates the amount which has come under modern treatment. When the figures concerning the Punjab are examined it will be seen that, as in the other provinces, results were becoming stationary up to, roughly, the year 1898. Shortly after that date I began to teach extensively and to advocate intracapsular extraction, so that it has now become practically the operation of election in the Punjab. The progress made in the Punjab since 1900, when compared with that of the other provinces, speaks more in favor of intracapsular extraction than volumes of academic disquisition.

The Punjab and N. W. Frontier in 1881 had 265 cataract operations; in 1913, 16,236. The United Provinces and Oudh in 1881 had 2,640; in 1913, 9,908. Bengal Provinces with Calcutta in 1881 had 337; in 1913, 1,291.

Madras Presidency and City in 1882 had 480 cataract operations; in 1913, 1,655. Bombay Presidency and City in 1883 had 193; in 1913, 1,586. The Central Provinces in 1883 had 27; in 1912, 922.

The phenomenal progress since 1900 in the Punjab compared with the other Provinces of India is undoubtedly due to the superior results obtained by intracapsular extraction. Nothing can contravert these facts. As far as matters surgical are concerned, those who are familiar with the Punjab know that we are dealing with a highly utilitarian people, a people who go entirely by results. Intracapsular extraction is beginning to extend rapidly to other provinces, and when it is extensively adopted, I expect to see progress in these provinces similar to what we have in the Punjab. It is being noticed by all who adopt the operation in other provinces, that the cases in their hospital rapidly increase in number at the expense of hospitals who adhere to Daviel's operation, thus showing clearly the patients' opinion regarding the comparative excellence of the two operations. I, personally, believe that it will not be many years before intracapsular extraction is the operation of election throughout the Indian Empire, and that those who stand out against it will disappear from want of material. The table above shows that we do over 31,000 cataracts a year in the Indian Empire, more than half of these operations being performed in the Punjab, with its 20 millions of people, the population of the Indian Empire being 315 millions. Twenty years hence there will be, I think, more than 60,000 cataracts a year coming under modern treatment in the Indian Empire. The fact that less cataract comes under modern treatment in other provinces than in the Punjab does not indicate that there is necessarily less cataract in those provinces. It does indicate that we have not secured the confidence of the patients in the same degree as we have in the Punjab.

I think, without encroaching on other men's work, I may claim to have established intracapsular extraction of cataract in the Punjab and in many other places in India. I do not claim to have been the first man to extract cataract in the capsule. Intracapsular extraction has been the dream of opthalmologists since the days of Daviel. It has been tried by a number of men we know, and probably by many others whose names we do not know. Their methods were so imperfect, that the risks associated with the procedure made it prohibitive, so that at the present hour they would all have ceased to exist.

I do claim that every detail associated with my name has been worked out by myself independent of even a suggestion from any other man; as for instance, the method of completely exposing the conjunctival sac for disinfection and for exposing the field for the operation; the method and the importance of controlling the orbicularis muscle; the different methods of dealing with the different types of lens; the fact that an eye should not be subjected to meddlesome dressing any more than any other surgical wound, etc.

Any one of the technical details which I have pointed out may, in itself, look trifling. It is only the experienced operator who comes to recognize their importance, and combined these details constitute a method which, as many of my pupils have shown, is not subject to greater loss of vitreous humour than the operation of Daviel in the same hands.

I have also shown that a cataract may be extracted at any stage of its immaturity as safely as when mature. I have thus established it as an operation which is destined to live, and, in my opinion, to take the place eventually of Daviel's operation, as distinguished from previous evanescent methods of intracapsular extraction.

I also claim that I have been the first man to teach the mechanical side of surgery as the mechanical side of any other art that is taught. The practice universal in Europe and America is to teach the mechanical side of the surgical art by means of lectures and demonstration. What other mechanical art is taught in this way? The procedure I adopt in teaching is to show the pupil in a considerable number of cases the method of operation, pointing out the importance of every detail. The pupil is then set to perform the operation before me on the living subject in a large number of cases. He is instructed as he proceeds; the mistakes he is making are pointed out and the reasons given, and I come to his relief in case of difficulties. A short course of training of this kind makes a man a more efficient operator than a life time of lectures or of looking at demonstrations. One advantage in this method of teaching is that it establishes the confidence of the operator in himself, which no other method does, or else force him to decide that he had better confine himself to the physician's art. I have had as pupils a large number of the I. M. S., of the R. A. M. C. and of the different missionary societies, together with Hindus, Mahomedans, Parsis, official and non-official, without respect to colour, caste or creed. I have had surgeons from Great Britain, Australia, Canada and especially from the United States. To teach men this way is a very strenuous and tiring task, as will be understood when the welfare of the patient is my responsibility and must be the first consideration.

This teaching I have been doing single handed and alone, unrecognized by government, in an institution grossly understaffed and financially starved. It will be understood how much strain is involved when it is stated that the work I have personally done includes more than 35,000 cataract operations, with a corresponding proportion of other ophthalmic operations. It also includes as much general surgery as that done by any other man living. In addition to all this, I have had my official work, the management of a jail during most of the time, the administration of the sanitation, medical charities and medico-legal work of a district of close on a million people. It is needless to say that I could not cover in teaching the whole field of ophthalmology in addition to my other work. It would take a "superman" to do that. Considering that postgraduate schools in the different branches of medicine are springing up over the Indian Empire, and the amount of material represented by the foregoing statistics, it is surely time that we have a postgraduate school to teach the subject to those pursuing a career in ophthalmology in the Indian Empire. We should not leave postgraduates to the meager material of Germany and Austria, since it is to Vienna and Berlin men go for postgraduate instruction, rather than to Great Britain. I would point out that the number of cataract operations in London in the year does not exceed 400-600, and in Vienna there are a few more. It may be said that this is not the time to raise an issue of this kind, when the Empire is in labour. I contend that this is just the time when "the spirit is on the waters." The spirit is abroad throughout the empire that we should develop our own industries, and not be dependent on other countries, a sentiment with which I whole-heartedly agree. Why should not India take its position in the scientific field of ophthalmology, since it has incomparably more material than any other country in the world? It is a subject which surely appeals to every man in India. All we require to establish a school of ophthalmology in India is money. I hope our patriotic fellow citizens will respond to the crying need of the land of their birth. A school of this kind must be properly manned and financed. Its incumbents should not be paid on the principle that they are to eke out a meager existence by means of private practice, competing with men who will do a cataract operation for two rupees. If it is to be a success, their pay and prospects should be so ample as to attract the best men available, as the prospect of private practice for such men may safely be calculated as approaching nil from this time onwards. The government is advancing rapidly as regards the improvement and development of their medical schools for undergraduates. Government is also instituting research schools and schools of tropical medicine all over India, for postgraduates, but nothing has been done to promote instruction and research in surgery postgraduate. The gulf which stands between European and Indian is being very slowly bridged. Among the builders of this bridge the surgeon stands out pre-eminently. It is he who has paved the way for modern sanitation and modern medicine, though both are yet in their infancy. From the sweeper to the gaddi the surgeon comes most closely in touch with the real life of the people and their aspirations. He is their friend and confessor, so to speak, a man of no political authority and in no way connected with the "taxation of the poor" or the "punishment of the innocent." Surgery makes an infinitely greater appeal to the people of this country than medicine. The indigenous medicine man still flourishes under the shelter of superstition and fate, neither of which can shelter the surgeon's art; hence the fact that surgery is the pioneer and paves the way for medicine. So, I think, of post graduate schools, one for surgery and surgical research should lead the way. It is a mistake to think that because there are a large number of Indians becoming qualified in medicine, therefore medicine may safely be left to take care of itself in India. India never required higher class men than it does at present and will do for many years to come, to lead the newly fledged profession in the way which experience in Europe and America has indicated, with all its humanitarian, scientific and aesthetic aspirations. The whole tendency of the Indian profession, becoming so rapidly produced, is competition for fees, thus reducing fees to such a low scale that it is impossible for such a profession to devote any attention to the development of the scientific side of its art, the whole tendency being to reduce the profession to a mere trade, in which he who advertises loudest reaps the biggest financial advantage. We are told that Indians do not possess the scientific spirit. I think there is much truth in this statement at the present time. The study of science is but in its infancy in India, and we can not therefore expect to see its people realizing the seductive satisfaction to be gained by scientific research, and its application to the alleviation of human suffering. Yet a people who, for ages past, have produced so many ascetics prepared to work through life for spiritual idealism, despising material welfare, has surely unlimited possibilities for the future of producing men who will give their lives to the interests of science, which are the interests of humanity.

The objects of this school which I advocate are: the study and teaching of the causes and prophylaxis of the many diseases to which the eye is incident in India. The teaching, both theoretically and practically, of the methods of treatment of diseases of the eye. The utilization of our material to such a degree that men and women from all the world will come for instruction to India.

Statistics of the Cataracts Operated on in the Leading Provinces of the Indian Empire.

Year—	Punjab and Northwest Frontier Province	United Provinces of Oudh and Agra.	Bengal including Calcutta.	Madras Presidency and City.	Bombay Presidency and City.	Central Provinces.
1881...	265	2,640	357	....	....	....
1882...	507	3,521	350	400	....	....
1883...	435	4,641	391	255	193	27

1884...	596	6,048	500	222	230	16
1885...	948	6,048	763	443	197	57
1886...	1,501	5,506	551	407	219	112
1887...	2,459	5.625	635	511	322	110
1888...	2.658	5,966	893	730	266	114
1889...	3,857	6,739	1,225	749	265	109
1890...	4,013	7,615	2,017	1,227	316	219
1891...	4,482	9,455	1,688	1,103	290	174
1892...	4.294	8,880	1,597	1,307	355	253
1893...	5,309	9,124	1,481	1,271	362	479
1894...	5,305	9.222	1,407	1,233	407	949
1895...	6,216	10,565	1,913	1.234	487	1,299
1896...	5,323	8,923	2,845	1,425	490	1,500
1897...	4.667	6.514	3,134	1,562	382	964
1898...	4.534	5,613	2.560	1,222	523	1,020
1899...	5,319	5,734	3,051	1,301	578	945
1900...	5,614	5,971	2,862	1,472	697	733
1901...	6,590	5,787	3,159	1,621	709	903
1902...	5,909	5,535	3,885	1,495	879	789
1903...	6,107	5,157	3,537	1,418	942	568
1904...	7,465	5,023	3,514	1,346	1,012	681
1905...	7,929	4,994	3,053	1,149	917	777
1906...	8,317	6,421	3,653	1,232	1,010	828
1907...	8,122	5,568	3,866	1,404	962	871
1908...	8,099	5,474	1,322	1,034	985	973
1909...	11,156	5,442	4,145	1,442	1,238	....
1910...	11.397	6,168	4,266	1,187	1,419	763
1911...	12,290	6,829	4,953	1,344	1,424	1,042
1912...	15,576	8,846	2,464	1,526	1,467	888
1913...	16,236	9,905	1,291	1,655	1,586	922

Total for the above provinces, 31,598.

Population, census 1911: Punjab and Northwest Frontier Province, 22,171,899; United Provinces of Oudh and Agra, 47,182,044; Bengal, including Calcutta, 79,973,084; Madras, presidency and city, 41,405,404; Bombay, presidency and city, 19,672,642; Central Provinces, 13,916,308.

THE REPORT OF A CASE OF MIRROR-WRITING.

BY

F. PHINIZY CALHOUN, A. B., M. D.

ATLANTA, GA.

In mirror-writing, while not an ophthalmological subject, curiously such cases first consult the ophthalmologist, as the eye is often considered responsible for this queer phenomenon. Properly these subjects could best be studied by the neurologist, alienist or psychologist. Recently having seen my first case, I became interested in the literature of the subject and I feel warranted in reporting briefly the important facts of my investigation of a comparatively rare condition.

Master T. W., age 7, is the fifth child of a supposedly normal man by his second wife. The father states that the family is well, of sound mind and there is nothing in the history for two generations which would give any information concerning the peculiarity of the patient, except there is one sister who is left handed.

Other than the diseases of childhood, the subject has been well. He is a well developed boy for his age, with a ruddy complexion and bright smiling countenance. While a little timid at our first introduction, he soon felt composed and talked freely. I found nothing abnormal in my examination other than a large quantity of adenoids which unquestionably caused his repeated colds. His eyes were normal except for a small amount of hyperopia. It was no fault of his that he did not enter school until the fall of 1914, for his father was a railroad employe and did not reside long in any one place. He did not know how to write when he entered the first grade, although he had scribbled with a pencil at home as most children do. He has always used his left hand in throwing and eating, and still continues after learning to write. In February, 1915, after the subject had copied a verse, his teacher first discovered his mirror-writing. By careful training at home and at school he has in part overcome this, and he can now write in the normal script only with his left hand, although it is clearly seen that

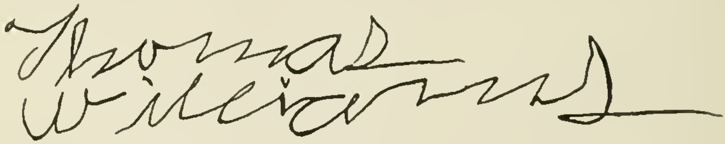


Fig. 1.—Normal Script with Left Hand.

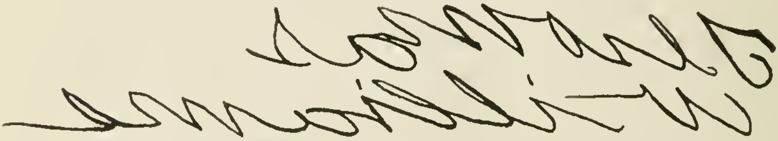


Fig. 2.—Mirror Script with Left Hand.

his writing is easier and the letters more perfectly formed when writing in the reversed way. He uses his right hand as awkwardly as a right handed child uses the left. He is able to read his reversed writing.

I find from my reading of the subject that mirror-writing has been practiced for many centuries, evidenced by the discovery of reversed names on Gallo-Roman pottery, as the word "Patane"[1] (evidently the name of the potter) occurs reversed on a vase found in Vendei in 1855, and by the much quoted fact that Leonardo de Vinci[2,3] the painter and writer, who had paralysis of the right arm, wrote from right to left. But to Erlenmeyer and Burchwald[4] in 1878, we must give credit for having first called attention to mirror-writing, the former advancing the theory that it is easier to use the arm in a centrifugal direction, the left from right to left, and the right from left to right, and that mirror-writing is the normal script for the left hand; while the latter called attention to the association of mirror-writing in patients with right hemiplegia.

It is evident from a study of the comparatively small number of reported cases that no one theory has been generally accepted, chiefly because these cases can be viewed from many angles, that is, by medical and non-medical men. In addition to the ideas of Erlenmeyer above quoted, Ireland[5] propounded the question, does the brain perceive the image reversed like a photo negative, or a double image formed in the visual center of each hemisphere, and do they lie to each other in opposite directions, e. g., C on the right side, and Ͻ on the left? We can thus conceive that the image on the left side of the brain being effaced through disease, the reversed image would remain in the right hemisphere, which would render the patient apt to trace the letters from right to left, the execution of which would be rendered all the more natural from the greater facility of the left hand to work in a centrifugal direction. Hale[6] takes exception to both theories advanced and commenting upon Ireland's suggestion says, "Modern physiology cannot accept with such completeness the dual character of the brain," and thinks that "the link that unites all the various states in which mirror-writing shows itself must be an imperfectly developed or pathologically disturbed psychic association and co-ordination." His theory then is, "the outer world is impressed upon the retina in an inverted image. It is only by experience laboriously acquired that we learn to interpret this image and to produce upright writing. The child and the feeble minded lacking this experience or, unable to acquire it, reproduce the visual image in incorrect spatial relation, hence mirror-writing or completely inverted writing."

Statistical studies of children and adults for mirror-writing have been made by many observers and the most extensive is that of Cahen[8] who asked 649 children in the city of Graz, Styria, to write with their left hands the ciphers from 1 to 10. The following are his results:

Classes	Males	Mirror writers	Per Cent	Female	Mirror writers	Per Cent	Both Sexes	Mirror writers	Per Cent
1 Class (lowest)	46	20	43	67	29	43	113	49	43
2 Class	67	7	11	50	11	22	117	18	15
3 Class	49	7	14	48	4	8	97	11	11
4 Class	49	3	6	53	4	8	102	7	7
5 Class	55	5	9	44	3	7	99	8	8
6 Class	61	8	13	60	6	10	121	14	12
Totals	327	50	15	322	57	18	649	107	16½

He concluded that the majority of the children were sound and the mirror-writers decreased with the advancing classes, but that in the upper class the mirror-writers were almost exclusively made out of mentally defective children such as those having deafness, adenoids, bad teeth, epilepsy, chorea, neurasthenia, etc. It is also his opinion that with each movement we make with an arm or foot the corresponding extremity of the opposite side has a tendency to make the same movement. Upon innervation of the muscles of one side, a part of the impulse passes over to the nerve center of the other side. This statement is confirmed by Clapham's[9] case of mirror-writing where all movements made by the fingers of one hand are repeated simultaneously by the fingers of the other hand, even to the dropping and breaking of a cup. Also Wilbur's case reported by Ireland[7] of a man who could write with both hands at once, one mirror-writing, the other normal.

From a pathological viewpoint, mirror-writing is rather common in children with some form of mental deficiency. It is also found in some adults, who from accident or paralysis of the right hand and arm, attempt to use the left hand and arm in writing, that the writing is mirror fashion. The fact has been many times noted that where mirror-writing was later acquired from some acute mental trouble or brain lesion as apoplexy, this tendency decreased with an improvement of the mental condition. When found in young children, it rapidly disappears among the normally intelligent, until at last it appears in the feeble minded as a complication or symptom of some organic brain lesion. Jones[11] reports a case of a boy of 7 who copied words in the normal hand, but from dictation he wrote in the reverse. He was an unusually bright pupil, yet it was with difficulty that his teacher broke him of the habit, although when tired he always resorted to his old habit.

A slight tendency to mirror-writing should be considered physiological as it is usually regarded the normal writing of the left hand. Supporting this view Russel[12] mentions a woman 35, brought to a hospital with right hemiplegia and aphasia of five days duration. She was asked to write her name and without hesitation wrote it mirror fashion with the left hand, and when told she had written backward, she at once corrected the error by writing her name from left to right.

The subject may also be studied from the viewpoint of the psychologist and Downey's[10] report, with his sound logic, has so thoroughly impressed me that I unhesitatingly mention the important facts in the history and his very interesting deductions.

X., age 25, third year college student, University of Wyoming, reported to his instructor some peculiar condition existing relative to a long-continued habit of right handed mirror-writing. The subject learned to write at the age of 5 by copying the writing or printing of her mother who sat across the table. After watching the mother who sat across the table, X. would be given the copy to imitate. X. wrote mirror fashion in these early attempts and during the whole of her first year in school and a part of the second or third year. The teacher who succeeded in breaking her of this habit exercised great care, requiring written work to be done over and over until it resembled the normal production. Not until after ten years of age was the child thoroughly broken. X. adds that even now when tired she reverts to mirror-writing.

In addition to this reversed form of writing, the subject reported that she had a strong tendency to read from right to left and this habit persisted about as long as the mirror-writing. There was a tendency at first to pronounce words backwards and the mother even states that as an infant the subject had crawled backward. Later in life the subject was in a cousin's newspaper office and it was no trouble for her to learn to set type, and in a few weeks she could set type as fast as he, although he had worked at this ten years or more.

In certain tests through which the examiner put his subject with other students acting as controls, he concluded that there was not evidence of greater ease of thought in writing the mirror script, but the test served to show definitely the slowness with which composition proceeded and points to a retardation of some kind.

In conclusion, I am in accord with the view of the above author that there is a tendency of certain children to write mirror-script instead of normal left-right script, and the reported cases show the conditions under which spontaneous mirror-writing appears and prove that mirror-writing is the normal writing of the left-handed or of the left hand in general when the right hand becomes incapacitated. Spatial displacements are common occurrences in the early drawings and attempts at writing of the right-handed child as well as of the left-handed one. For example, a child in attempting to make numerals may turn them upside down or turn them upon the side. It is not uncommon to see a child enjoying a picture book upside down or turned from the normal position. This indifference to position can be understood only in the light of the development of space perception, but there exists in the child a perception of form with an apparent indifference to position, which is only developed by an outgrowth of experience. In the child the fusion sense of form and position has not resulted, hence the ease with which he produces and interprets given form in any position.

The question is raised why variations occur in children to produce such forms. From a psychological reasoning it partly depends upon, first, external conditions originating in some accident which may make permanent a form of misplacement, and second, partly upon inner conditions, for a child visually pre-occupied or indifferent will pay less attention to the position of a given form than will a child of a comprehending disposition.

The same author then concludes that "while the production of mirror-writing is in itself no sign of deficiency, a continued failure to note its difference from usual writing may indicate weakness of comprehension."

1. M. Baudoin, *France Medicale*, 1903, p. 22.

2. G. Balle, *Gazette de Med. et Chir.*, 1901, XLVIII, p. 1.

3. C. K. Mills, *Journal Nervous and Mental Dis.*, 1894. XIX. p. 85-91.
4. Buchwald. *Berlin Klin. Wochen*, 1879. XV, p. 6-8.
5. Ireland, *Brain*, 1881. IV, p. 361.
6. Hale. *Journal A. M. A.*, 1901. XXXVII, p. 1380-83.
7. Ireland. *Alienist and Neurol*, 1893. XIV, p. 100.
8. Cahen. *Deutsches Archiv f. Klin. Medizin*, 1893, LI. p. 140.
9. Clapham, *Quart. Med. Journal*, 1894. III, p. 333.
10. Downey, *Psychological Review*, 1914. XXI, p. 408.
11. Jones, *Boston Med. and Surg. Jour.*, 1903. CXLIX. p. 515.
12. Russell, *Birmingham Med. Rev.*, 1900. XLVIII, p. 95.

ERRORS OF REFRACTION AND THEIR AVERAGE FREQUENCY.

BY

A. C. DURAND, M. D.

ITHACA, N. Y.

In May, 1913, while preparing a paper to be read before the County Medical Society, my attention was attracted by an article along similar lines in the Ophthalmic Record for that month.* Interesting as the article was, it was not the main thesis that struck me most forcibly, but rather the underlying fundamental question of the frequency of the several errors of refraction as estimated by the author in his series of 500 cases. If there should be reasonable doubt as to the accuracy of these findings, at least part of the value of the statistics would be gone.

The ages of his patients range from five to forty-five years, that is, up to about the beginning or a little past the beginning of presbyopia. One might conclude from this that a series of 500 patients had been selected in whose eyes a cycloplegic had been used to find the error of refraction. At least it hardly seems possible that among that number of consecutive patients in any man's practice some would not be over forty-five. It is further stated that of the adults in this series the majority belonged to a class in which near work is excessive. Hence the series consists of patients most strongly demanding complete cycloplegia in estimating the ametropia. One would, therefore, expect to find a close similarity between the frequency of the several errors of refraction in this series and another similar series refracted under a cycloplegic by another ophthalmologist, unless there is some essential difference in the methods pursued by the two men in estimating errors of refraction. If a marked difference does exist then it is fair to conclude that the fault lies in a lack of uniformity in methods or an inability on the part of individuals to secure similar results from a given method. Opinions may differ in regard to the use of a cycloplegic in all patients under a certain age, but before we can draw any valuable deductions concerning the symptoms which accompany certain errors of refraction we must be absolutely sure what static error exists. On the other hand, if drops were not used in the series of cases under consideration the table makes a strong appeal for them.

---

* "An Analytical Consideration of the Symptoms of Eyestrain with Special Reference to those Symptoms Cited to the General Practitioner," by John Ray Newcomb, M. D., The Opthalmic Record, May, 1913, Vol. XXII, New Series, chapter 5, p. 233.

For comparison with the above mentioned series, in so far as the various errors of refraction are concerned, I have investigated the records of 2500 patients of all ages from the files of Dr. George M. Gould, covering a period of about two years when I was working with him as an assistant. The series naturally falls into two great classes, cycloplegic and non-cycloplegic or natural cases. In estimating the refraction of practically all patients under fifty years of age a solution of homatropin and cocain* was used, a drop in each eye every seven and a half or eight minutes until six had been instilled. A period of about ten minutes was permitted to elapse before testing of the eyes was begun. In this series also a large percentage, if not a majority, of the adult patients were university students or others whose occupations entailed an excess of near work.

It might be stated here, more or less parenthetically, that we refracted the patients independently, and yet seldom varied more than a quarter of a diopter. It was rare indeed that we did not arrive at the same conclusion in regard to the kind of error present. Occasionally, in cases of low degrees of astigmatism, we were unable to agree as to whether it was of the myopic or of the hyperopic type. It became clear to us, however, that if a large number of men should refract in this same way there would be a remarkable similarity in their results, where at present the lack of similarity throws discredit upon the profession and opens the way for the optometrist, the optician, and the fake spectacle vendor.

---

*Homatropin hydrobromate, gr. X, Cocain hydrochlorid, gr. iss to the ounce.

In order to show that a method consistently followed does produce similar results I have tabulated 500 cases of mydriatic refraction from my own private practice, which is similar to Dr. Gould's except that the proportion of students is rather greater. Eight, instead of six, drops of homatropin and cocain at ten minute intervals were used, so that the time between the instillation of the first drop and the beginning of the refraction was one hour and twenty minutes instead of fifty minutes.

I also asked an oculist in New York City, Dr. Isaac Hartshorne, who studied refraction with Dr. Gould, to contribute a series of cases to affirm or discredit my own compilation. His figures still further strengthen the opinion that if a large number of men should follow carefully the subjective method with the test letters there would be a close similarity in their results. I do not mean in any way to belittle the assistance obtained from other methods of refraction.

Of the 2,500 patients examined by Dr. Gould and myself, 2,008, or 80.3 per cent, were refracted under a cycloplegic; the remaining 492 were refracted without "drops," and are included to show that the average patient over 50 years of age can be pretty accurately refracted with the eyes in the natural condition. The main differences are attributable to the small amount of accommodation still existing in the eyes of patients just over fifty, throwing the case into a different class than would be the case if there were no accommodation present. For example, the increase in the percentages of mixed and simple hyperopic astigmatism could be easily accounted for in this way, a certain number of those who accepted only a plus cylinder would have been placed in the compound hyperopic astigmatism class had there been no accommodation present, and so on. It should be noted that the table is based upon the cycloplegic findings and not upon what was ordered. Were the figures compiled from the prescriptions almost the only difference would be in the compound hyperopic and the simple hyperopic astigmatism classes, fewer of the former and more of the latter.

Arranged in the order of frequency of the several errors of refraction we have the following table, with Dr. Newcomb's figures for comparison:

	Gould's 2500				New-comb's 500	Hartshorne		Author	
	Cycloplegic cases		Natural cases			Mydriatic cases		Mydriatic cases	
	No.	%	No.	%	%	No.	%	No.	%
Comp. H. As.........	1230	61.3	282	57.3	36.8	300	58.8	301	60.2
Comp. M. As.........	233	11.6	74	15.0	21.1	55	10.8	67	13.4
Simple H. As.........	141	7.0	41	8.3	2.1	25	5.0	54	10.8
Mixed Astig.........	57	2.8	15	3.1	25.1	21	4.1	8	1.6
Simple M. As.........	39	1.94	8	1.6	1.6	7	1.4	4	0.8
Simple H.............	..	...	1	0.2	8.9	5	1.0	1	0.2
Simple M.............	..	...	.	...	4.2	1	0.2	..	..
Normal	..	...	..	...	...	1	0.2	..	..
Miscellaneous[1]	308	15.3	71	14.4	...	95	18.6	65	13.0
Totals	2008	99.9	492	99.99	99.8	510	100	500	100
All forms H..........	1504	74.9	355	72.2	47.8	...	75.2	396	79.2
All forms M..........	304	15.2	86	17.5	26.9	...	12.4	77	15.4
Mixed Astig..........	57	2.8	15	3.1	25.1	...	5.7	8	1.6
Miscellaneous[2]	143	7.1	36	7.3	....	...	6.7	19	3.8
	2008	100	492	100	99.8	...	100	500	100

[1] Includes all cases not strictly in the other classes.

[2] For Dr. Gould's mydriatic cases these were distributed as follows:

a.	One eye myopic, other hyperopic................	51	2.5%
b.	One hyperopic, other mixed......................	71	3.5%
c.	One myopic, other mixed	21	1.0%

Simply stated in round numbers, the striking facts brought out by a comparison of these figures are as follows: One oculist finds 75 per cent, another less than 50 per cent of all his patients more or less hyperopic; one finds 15 per cent myopic, the other 27 per cent; one finds 3 per cent with mixed astigmatism, the other 25 per cent. Even including those with mixed astigmatism in one eye and some form of myopia or hyperopia in the other, the percentage is still only 7.5 as compared with 25. According to Thorington* also four out of every five patients are hyperopic, a statement well supported by the above table.

Taking patients as they come these differences do not seem reasonable; that is, it does not seem possible that the average static errors of refraction differ so widely. The differences would seem to be due to lack of uniformity in methods of refraction, or differences of opinion in regard to the objects for which glasses are fitted. Unless the various methods produce essentially the same results, some one method scientifically applied, must become the standard or else the reputation of the profession will continue to suffer as it has in the past. At present the subjective test at the trial case is apparently the court of last appeal, and hence it should give essentially the same result in a given case in the hands of any number of refractionists. In a given case there is only one true correction for the static error present, and, ideally, all methods and all operators should be able to find that correction without variation. The day is past when an eye with half a diopter of error can be considered emmetropic, for in the hands of a careful refractionist a quarter and even an eighth of a diopter is often potent for good or ill.

---

*Refraction and How to Refract, 2nd Edition, p. 220.

If the wearing of glasses is made dependent upon diminished visual acuity, one can readily see that a man will tend to prescribe more largely for myopes than for hyperopes; and again, if sharpness of vision is of prime importance he will tend to add concave spheres to convex cylinders and thus increase the percentage of his mixed astigmatisms. It follows that nearsightedness will be over-corrected and farsightedness under-corrected when visual acuity at the time of examination is made too important a factor. Fortunately for all of us, a decidedly inaccurate pair of glasses often makes a satisfied patient; and yet, until a hundred oculists are able to agree pretty closely upon the error of refraction in a thousand patients, deductions from the findings must be of doubtful value.

For example, could the two oculists who prescribed the following glasses for the same patient draw very similar conclusions in regard to any subject under investigation? The first ordered, after an examination under a cycloplegic,

R. + Sph. 0.25. − Cyl. 1.87 ax. 75
L. + Cyl. 0.25 ax. 180;

the second, also after a reliable cycloplegic, prescribed

$$\left.\begin{array}{l}\text{R. + Cyl. 3.50 ax. 10 = 20/20?}\\ \text{L. + Cyl. 0.75 ax. 150 = 20/20?}\end{array}\right\}\text{B. E. 20/15.}$$

Within two months the visual acuity had increased to 20/15 in each eye, as it had been under the mydriatic. The results certainly proved the correctness of the latter pair of glasses.

Of course the correction of even a small part of the total hyperopia often brings complete relief of symptoms and satisfactory visual acuity. After a time a further correction brings a cessation of returning symptoms, etc. In young people it is often inadvisable to attempt to prescribe anywhere near all of the static error. But what about those near the border line, whose real defect is a low hyperopic astigmatism? They are liable to have low concave cylinders ordered instead, and then the results are apt to be far from satisfactory and even disastrous.

The oculist who is seeking the best visual acuity and who deals with his hyperopes as indicated above presumably considerably over-corrects his myopic patients in a large majority of cases. They are often pleased with the brilliancy of their vision, but their ciliary muscles are unaccustomed to the constant contraction and they soon begin to suffer from headaches, strained feeling, dizziness, inability to concentrate their attention upon their work, and various nervous reflexes. Furthermore, in time the visual acuity often deteriorates and is restored only by wearing for a long period a lower correction, to say nothing of the danger of increasing the myopia.

The following cases exemplify the results which may come from the inadequate correction of the various errors of refraction. Other patients wearing just as atrocious glasses may suffer comparatively little, but that is no reason for subjecting any one to possible discomfort and even invalidism.

J. T. H. illustrates the under-correction, as well as the atrocious correction, of hyperopia. He is a large, splendidly built man of 36. He had been a stenographer in New York City, but finding his health undermined by close application and eyestrain, he came to the university to take the winter course in agriculture, preparing himself for an out-door life on the farm. He had severe ocular pains, the left eye especially often waking him at night throbbing like a "jumping toothache." There was a "drawn, tense feeling" in his eyes, and he could not keep awake when he tried to read. He had worn glasses for twelve years, the last ones having been prescribed two years before, although three weeks previously another oculist had said the glasses were "all right so far as he could see" and he "could not change them for the better." These excellent lenses were:

$$\left.\begin{array}{l}\text{R. + Cyl. 0.50 ax. 180}\\ \text{L. + Cyl. 0.75 ax. 180}\end{array}\right\}\text{in eyeglasses.}$$

His static error was

R. + Sph. 1.12 + Cyl. 0.25 ax. 135 = 20/15.

L. + Sph. 0.75 + Cyl. 0.62 ax. 12½ = 20/15.

Three days later the following glasses were ordered for constant use in spectacles:

R. + Sph. 0.75 + Cyl. 0.25 ax. 135.

L. + Sph. 0.37 + Cyl. 0.62 ax. 15.

J. S. W., 28 years of age, illustrates not only the under-correction of astigmatism but also the addition of concave spheres to increase the visual acuity, even though the acuity was above the standard with a higher astigmatic correction without concave spheres. For the past six years the patient had suffered much from vertigo, especially when there was confusion, bright lights, and moving objects. His eyes did not seem to focus at distance. Much of the time he had been subject to distressing indigestion. When first seen he had been away from home for eight weeks and was in "good physical condition except for the giddiness." A number of physicians had told him that he had "neurasthenia" and that there was nothing the matter with him. The last physician consulted sent him to an oculist who said the glasses he had been wearing for six years were all right in every respect. He had worn glasses altogether eight years, and the ones which were "right in every respect" were as follows:

R. — Sph. 0.25 + Cyl. 1.00 ax. 90.
L. — Sph. 0.50 + Cyl. 1.25 ax. 90.

His natural vision was 20/40 and was brought to 20/15 with

R. + Cyl. 1.12 ax. 90.
L. + Sph. 0.12 + Cyl. 1.37 ax. 90.

As was to be expected the static error was somewhat greater.

R. + Cyl. 1.50 ax. 90 = 20/15.
L. + Cyl. 1.75 ax. 90 = 20/15.

and this was ordered for constant use in spectacles. A year later he was still dizzy occasionally, and under homatropin and cocain the right lens was changed to + cyl. 1.75 ax. 90. Several months later he wrote as follows: "I have had no trouble of any sort since you changed the prescription. I can assure you your treatment has resulted in a vast improvement in my physical condition." Just prior to the second examination the patient met his former oculist on the street and was urged to come into the office so that the oculist might see what he was wearing. There were many exclamations over the strength of the glasses and it was demonstrated that the glasses which were "right in every respect" gave much sharper vision, although he read 20/15 easily. The oculist called in a neighboring colleague to confirm his opinion, but the patient had no desire to return to his former state.

Nearsighted patients suffer no less severely from over-correction of their myopia. Mrs. L. H. B., 39 years of age, was referred to me by her physician in April, 1913. She had been having "nervous headaches." She was "very nervous," and had "spells with her heart" when she "gets numb all over." Her eyes smarted when she read. She had been wearing for five years the following lenses, prescribed without drops:

R. — Sph. 0.75 — Cyl. 1.00 ax. 3.
L. — Sph. 0.75 — Cyl. 1.00 ax. 4.

Two years before coming to me another oculist had prescribed for reading, saying that the distance ones were all right. Under homatropin and cocain her error refraction was:

R. — Sph. 0.25 — Cyl. 0.62 ax. 150 = 20/15.
L. — Sph. 0.62 — Cyl. 0.25 ax. 20 = 20/15.

This was ordered for constant use in spectacles. A month later she reported that all symptoms had disappeared.

C. F. A., a powerful, eighteen-year-old athlete, had worn glasses for eight years, but had never had drops in his eyes. His eyes had always felt weak and strained, and especially so since entering the university. He complained of inability to focus on near work and to concentrate his mind on his reading, often perusing a passage several times without comprehending it. He had passed only nine hours of the fifteen or more he was taking. About a year before an oculist had ordered

R. — Sph. 2.50 — Cyl. 0.50 ax. 180.
L. — Sph. 2.50.

On February 17, 1914, his static error was

B. E. — Sph. 1.75 — Cyl. 0.25 ax. 180 = 20/15.

This was ordered for constant use in spectacles. By the middle of April things were going so much better with him that the faculty withdrew his name from the probation list and permitted him to enter athletics. He is in the university again this year—proof that he "made good" the second semester of last year.

Of course, changes occur in the eyes themselves in time, but one never finds variations like those recorded above. There are, rather, slight changes in amounts both of spheres and cylinders and in the direction of the axes of the cylinders. One must be very charitable in his opinion of the work of others when he remembers his own apparently unavoidable mistakes which he himself has the good fortune to discover; and especially since one finds now and then a patient who, at first, is most uncomfortable with glasses which years later prove to correct very nearly the error of refraction present, and which at the later period were comfortable and curative. But nevertheless it seems to me from the foregoing and from daily experience that there is a lack of uniformity in results among oculists where a high degree of uniformity is really quite possible, and that our reputation suffers in consequence.

AN UNUSUALLY HAPPY RESULT FOLLOWING THE REMOVAL OF AN INTRA-OCULAR FOREIGN BODY WHICH HAD BEEN IN THE EYE NEARLY FOUR MONTHS.

BY

CALVIN R. ELWOOD, M. D.

MENOMINEE, MICH.

On January 13th W. L. was referred to me by Dr. Mason of Hermansville, Mich. He gave a history of having been struck in the eye with a fragment of steel from a chisel in September, 1914. He had worked some of the time and had relatively little discomfort aside from impaired vision. There was a small perforating wound of the iris in the inferior segment, but no traumatic cataract. There was slight ciliary congestion, the patient complained a little of a floating vitreous opacity, and vision in the eye, which had formerly been normal, was ½ of 20/50. Atropin had been used after the injury and other treatment of similar character employed.

A radiograph showed an intraocular foreign body, which was floating in the vitreous.

A scleral incision was made and the foreign body, which proved to be a piece of steel, 4x2 mm. in its largest diameters, was easily removed. The wound was closed by a conjunctival flap, and the usual after treatment employed. The patient made a prompt recovery, wanted to go back to work long before permission was granted, and on March 9th was examined for the last time. At that time vision was the same in both eyes (20/15—1). There was absolutely no discomfort excepting for two small floating opacities which are much smaller than formerly.

The only abnormality apparent is the iris, which is a peculiar brown color, whereas the iris in the uninjured eye is blue. The pupil responds very imperfectly to light and accommodation, but readily to atropin.

Taking into consideration the location of the penetrating wound in the iris, which is near the periphery, and the fact that no traumatic cataract or marked cyclitis developed, it seems fair to conclude that the foreign body passed into the vitreous through the suspensory ligament without injuring either ciliary body or lens. The slight reaction after the removal of the foreign body, which had remained in the eye so long, with such good vision resulting is unusual in the writer's experience.

REPORTS OF SOCIETIES

CHICAGO OPHTHALMOLOGICAL SOCIETY.

WILLIAM E. GAMBLE, M. D., CHAIRMAN.

MARCH 15, 1915.

Congenital Anomaly of the Left Eye.

Dr. Herbert Walker reported a case of congenital anomaly of the left eye and exhibited the patient. The right eye was normal; distant vision 20/20 minus 1; left eye, 22/100; field contracted; absolute scotoma; nerve head colobomatous; arteries and veins anomalous; retina poorly supplied with vessels. Retina has misplaced pigment spots, but it is a question whether these are misplaced pigment spots or a diseased condition. The macula has a sac-like protuberance of about two or three times the size of the nerve head, and from the optic nerve run fine fibers over toward this sac-like protuberance. The sac is about 4 mm. high at the lower portion and at the upper it is about 2 diopters high. He believes there is fluid in the sac. The cyst is white. There are no vessels traversing it. It is almost transparent at the upper portion with a greenish hue. The whole thing looks almost snow-flake like.

As to the literature, Fuchs speaks of a cyst-like protuberance at the macula and says it is congenital.

DISCUSSION.—Dr. Harry S. Gradle said there were one or two things that would rule out the congenital phase of this case. There were inflammatory symptoms and signs in the choroid and retina around the abnormality. At the lower edge of it the retina was fluffy. The retina was somewhat thickened where vessels appear, and there was a fluffy condition around the upper edge. There were several choroidal spots. At one point one of the vessels ran into it and disappeared. The whole thing ran on top of the nerve layer. If the condition were congenital, he did not think there would be these inflammatory signs, and there would be vessels showing on the surface of it. He thought it was some sort of inflammatory condition, and suggested puncturing the cyst with a fine needle.

Dr. Walker, in reply, said, first, there was coloboma of the nerve head. Second, there was an anomalous distribution of the retinal arteries, which was not due to an inflammatory condition. There were pigment spots, and the cyst-like condition at the macula was not due to an inflammatory condition. The cyst looked more like the cyst of a cysticercus, but the cyst of a cysticercus was semi-transparent. This was not of that type. The retina was not normal. These pigment spots might be pathologic. To puncture the cyst would mean very heroic treatment, and he would not undertake to puncture a cyst so near the optic nerve. The patient consulted him on account of divergent strabismus which dated back to childhood. The man had 45° of divergent strabismus.

Lesion in Upper Portion of Cuneus.

Dr. George F. Suker exhibited a set of visual charts of a rather unique case. He also showed X-ray pictures of the case which were taken on the 18th of February. Patient was chief of police of one of the cities in the state who, while performing his duty, was held up and shot in the right occipital region, the bullet passing backward and upward and a little downward toward the right side. He was picked up unconscious, taken to the hospital, but nothing was done for him. He remained in a hebetudinous condition for several weeks until he recovered sufficiently to get about. Patient was sent to Dr. Suker for consultation. He showed three stereoscopic views of the field of vision. There was a distinct shadow round about the impact of the bullet, part of it pressing upon the inner table of the cranium and the other part outside of the skull. The fields disclosed homonymous symmetrical quadrangular hemianopsia to a degree. There was scotoma in the left eye, but not very definite. This placed the lesion, as far as he could determine, in the cuneus and conformed to the exact lineation of the retinal fibers in their occipital endings, as outlined by Schaefer and Sanger Brown years ago. The lesion, he thought, must be in the upper portion of the cuneus because the quadrangular fields were limited. The X-ray findings and shadows of the brain corresponded to about the location of the cuneus, and the man was recovering fairly well, although nothing had been done, because the bullet was not within the brain, and the edema present was most likely due to a hemorrhage by *countrecoup*, and he thought it would be useless to do any trephining or decompression operation. This was the consensus of opinion of two other men who saw the case with him.

A very peculiar symptom was that when the patient looked down and turned his head toward the right and struck the blind field, he immediately had vertigo; he had the sensation of falling over a precipice, but as soon as he swung the eyes around this symptom disappeared. He had 20/20 vision, was presbyopic, 4 or 5 D. There was no hyperemia of the disc or engorgement indicating the line of pressure along the optic nerve either by choked disc or neuro-retinitis.

According to the literature, there were only 15 or 20 cases of such quadrangular fields on record.

DISCUSSION.—Dr. Thomas Faith recalled two cases of homonymous quadrangular hemianopsia, one in a patient with pneumonia who subsequently died. The other patient, a pneumonia case, lived for some time, was able to get about again and was fairly comfortable. In her case the quadrangular hemianopsia persisted through life. She died suddenly without any explanation for her death. These cases were seen one winter coming close together, within three or four weeks. He thought there might have been a local metastatic focus responsible for the trouble. Dizziness was very marked. so much so that the patient found it difficult to get around unless she had some particular guide, and followed it in going from one room to another.

Dr. Suker said that this was the first instance where he could possibly trace the trauma to the cuneus lobe. or which conclusively proved to his mind the characteristic endings of the retinal nerve fibers as far as the interpretation of objects was concerned. It was largely due to Sanger Brown that the checker-board division of the retina had been accepted.

Injury of the Eye-Lid.

Dr. Oscar Dodd exhibited a man who, on the 30th of January, was hit at the inner corner of the eye with a cow's horn, tearing the nasal end of the upper lid off completely and also the tarsus from the levator. When he saw the man ten days later the upper lid was hanging down on the cheek. There was a large amount of granulation tissue, a great deal of ecchymosis, and considerable secretion from the conjunctival surface. Dr. Dodd was able to bring the lid up to place and coapt the torn surfaces very well; he managed to get the conjunctiva together and to coapt the skin perfectly. He then waited for the secretion to subside as well as the edema of the lid, so that he could operate upon the levator for the lid hung perfectly motionless over the lower one. Two weeks ago he operated again, doing an operation exactly like the Bush operation for ptosis, with the exception that the levator of the lid, instead of being in place, was torn loose and separated three-quarters of an inch from the cartillage and retracted as far as possible. A large amount of new tissue had been thrown out so that it was difficult to get at the muscle and free it and bring it forward. He introduced three loop sutures to get the muscle and sutured to the outer surface of the cartilage, suturing the skin separately.

In bringing the muscle down it formed an entropion of the superior fornix which extended down under the upper lid to the border of the lid. The edema was very great after operation, but this was subsiding. Later he expected simply to incise a large part of the prolapsing fold so that the lid will go back in place. Movement was very good, and he thought the patient would be able to use the eye without any trouble.

Injuries of the lid were quite rare, according to the literature. Injuries, however, of the eye-ball from cow's horn were not rare. Of 1,250 severe injuries of the eye-ball, where sight was lost, 59 were due to injuries from cow's horn.

DISCUSSION.—Dr. Michael Goldenburg related a similar case which came under his observation three years ago, but the injury was not the result of trauma from a cow's horn. A little boy, four or five years of age, came into the clinic with the upper lid hanging off to one side, held by a piece of skin four or five mm. wide. He had been playing on top of a barn. In front of the barn there was a hook upon which a harness was hung. Patient was on the roof of the barn, either fell off or jumped off and caught the upper lid in this hook. He saw patient two or three hours after the accident, had him taken to the operating room, and put two sutures in the upper fornix and along the margin of the lid, the skin and outside, and the boy made a perfect recovery. One could hardly detect the scar after two weeks.

Dr. Lee Wallace Dean, Iowa City, Iowa, mentioned a family in which the history of any ocular or degenerative astigmatism was negative except for the appearance of a ptosis in the father. Every one of the children had ptosis. One child had a partial external ophthalmoplegia. The mother had no difficulty. It was a case of family degeneracy with hereditary ptosis and external ophthalmoplegia.

New Speculum.

Dr. Charles G. Darling exhibited a modified speculum designed by Crookman, which has a separate blade above and below that fits into the main blade and will hold a piece of rubber tissue or oiled silk which will cover the margin of the lid, the lashes, and the skin of the lid, giving the operator a sterile field to work in.

Xeroderma Pigmentosum.

Dr. Lee Wallace Dean, Iowa City, Iowa, reported the ocular findings in two cases of this disease, and stated that it is a rare disease of the skin which makes it appearance frequently in several children in a family, while the history of the parents shows no disease which can be associated in any way with the trouble in the children. The patients are born with normal skin and develop in the first, or at the latest, during the second year, circumscribed red spots on the skin. These spots appear only on the parts of the body that are exposed to the sun. They disappear as a rule in a short time with scaling, but make their appearance again soon afterwards with the action of sunlight.

The eyes suffer in xeroderma from involvement of the lids and conjunctiva, and more rarely the cornea. The first signs of the disease usually make their appearance in the face and especially on the lids. With the scarring of the skin and atrophy ectropion is produced. Usually very early in the course of the disease the eye lashes fall out. From the freckle-like spots warty elevations appear, which finally are converted into true carcinoma. These growths may affect all four of the lids. The conjunctiva is often affected by the xeroderma. In addition to the conjunctivitis we find numerous red spots with pigment flakes and dilated blood vessels in the conjunctiva. In the beginning these changes are often very slight, but with careful investigation they are usually discovered Marked shrinking of the conjunctiva is often noticed. Opacity of the cornea is frequently present. The tumors sometimes involve the conjunctiva. A true carcinoma of the corneoscleral boundary has been reported in xeroderma.

No definite theory for the trouble is known. The carcinomatous nodules should be removed by surgical methods.

The first case was V. F., white, poorly nourished, female, 8 years of age.

The general treatment of the patients is under the direction of Dr. Kessler, by whom these patients were referred to the author. The systematic treatment consists in the use of cocoa butter externally and internally injection of auto-serum. The latter procedure is carried out by drawing away from the patient blood, allowing it to clot, and then, by the use of the centrifuge, the serum is secured as clear as possible and re-injected. This treatment is improving the condition of the skin.

With the little girl, he has removed the warty-like tumors from each of the lower lids and from the right upper lid, and several of the growths from the face.

DISCUSSION.—Dr. George F. Suker stated that two years ago he presented the cases of two children before the Chicago Medical Society. There were four children in the family. The oldest one was still living; three others had died since that time; one at the age of three, another at five, and the other at seven. He did not see the child that was three years of age, but the other two, aged five and seven years respectively, came under his observation. The difference between Dr. Dean's cases and those he saw was that, instead of the lesions being carcinomatous, they were sarco-carcinomatous. The patient who was five years of age had a distinct nodular growth on the right cornea and a pustular nodule on the lower lid causing a marked entropion on which he performed a plastic. The eye subsequently had to be enucleated, and a short time thereafter the patient died. Both children were extremely emaciated. Serum injections and X-ray were tried but of no avail. He lost track of the child of seven because the family had moved away.

Xeroderma pigmentosum is a rare skin lesion, and when it appears very little or nothing can be done for it. Usually the disease begins at two or more years of age and seldom runs beyond the seventh or eighth year. He does not believe there are more than 100 cases of the disease on record, covering a period of from 80 to 90 years.

A New and Safe Technic for the Cataract Operation.

Dr. William A. Fisher stated that if loss of vitreous and post-operative inflammation can be avoided in the extraction of a lens, it must be admitted that we are approaching an ideal cataract operation, inasmuch as normal vision is expected in every case where the cornea is clear and the fundus normal. The intracapsular operation more nearly approaches the ideal than any method he is familiar with, providing the operation is performed by operators skilled in the technic.

Dr. Fisher described the various steps of the operation by means of lantern slides, and mentioned two new details in the technic, one of which is the use of the lower lid hook which is original with himself, and the other, the employment of the needle to assist in the delivery of the lens when there is threatening or actual loss of vitreous. The bandage is an important part of the technic, but the greatest care should be taken against any kind of pressure. He prefers four thicknesses of gauze long enough to cover both eyes with a notch made for the nose to keep it from slipping away from the eye. The lashes are covered with carefully prepared yellow oxide of mercury ointment, grain one to a dram, and applied with a glass rod. The gauze is then laid upon the eyes and a starch bandage is applied.

Operators who have mastered the Smith technic will seldom use the needle or spoon.

After referring to accidents and complications that occur when performing the so-called classical cataract operation, Dr. Fisher drew the following conclusions: 1. Many lenses will be removed in capsule. 2. There is less postoperative inflammation. 3. Less infection. 4. Less secondary operations. 5. Less loss of vitreous. 6. Less time in hospital. 7. Better average vision. 8. Patients can be operated any time the opacity incapacitates them from their ordinary duties. 9. Safer technic than the old operation for beginners as well as experienced operators.

DISCUSSION.—Dr. George F. Suker since mastering the technic of intracapsular extraction, feels safe in delivering the lens in its capsule. As regards the use of a fenestrated spoon for the delivery of a partially luxated lens, he does not think it is good surgery and gave his reasons for it. Judging from his own experience, one ought not to have any great difficulty in doing intracapsular extraction provided he has acquired the technic.

Dr. C. F. Burkhardt, Effingham, Illinois, asked whether there was greater danger of loss of vitreous from the intracapsular operation as done by the average operator, who had not mastered the exact technic of Smith or Fisher, than from the old method of operating.

Dr. G. H. Mundt stated that until last October he held the same opinion as the majority of ophthalmologists in regard to the Smith intracapsular operation, but since seeing Dr. Fisher perform 12 or 15 of these operations, and having operated in this manner himself, the operation appealed to him very strongly. The vitreous did not present more than once in the 12 or 15 operations he saw. The lid hook simplifies the operation very much.

Dr. Thomas Faith emphasized the importance of mastering the technic of the Smith-Fisher operation, and since doing it he had performed the intracapsular operation in four cases, and although he was a doubting Thomas at first, the operation now appealed to him.

Dr. Oliver Tydings stated that so much had been said about loss of vitreous in the Smith operation, that many members of the profession had learned to regard this as a part of the operation, but if one would study the statistics he would find they did not show a more frequent loss by this than by any other method, nor was this all, for if one would carefully analyze these losses he would find by the Smith method the loss was as a rule slight, while by the classical method, when the vitreous came ahead of the lens one felt very happy if he could extract the lens and get through with the toilet without losing more than one-third of the vitreous. This safe operation had been made possible by the use of lid retractors to relieve all pressure, the double hook being one, and the needle to be used in case of necessity when trouble arose due either to too small an incision or too large a lens. By this method one would leave some capsule, but would save all vitreous.

The objection to leaving a bandage on for nine days was only the protest of the untried.

Dr. John R. Hoffman stated that in his earlier operations he followed the technic, as near as possible, described by Dr. Vail in his description of the operation, but he failed to get the idea of the use of the spoon in delivering the lens in impending loss of vitreous. He did not get the technic until after the return of Dr. Fisher from India. Since then he had some experience in its use, and agreed with Fisher that it was liable to produce a decided disturbance of the vitreous. Since Dr. Fisher had given the technic of the use of the needle, he was reluctant to use the spoon except as a last resort, as with the needle, even though the capsule was ruptured it was left in such position, that very little irritation was caused by its presence, and it was out of the line of vision, or if it was not, it could be needled as after the old operation.

Dr. Fisher had worked out a technic which would prove as near a safe one in cataract extraction as possible, especially in immature cases where the patient would suffer great economical disadvantage in waiting for maturity, would do away with the dangers of the old operations, where capsule remained, and would also help the practitioner in doing many intracapsular extractions.

Dr. Fisher, in closing, answered the question of Dr. Burkhardt by quoting his last conclusion, which reads: "Safer technic than the old operation for beginners as well as experienced operators."

When he was working with Dr. Smith in India he thought the Smith technic was so good that it could not be improved, but as soon as he returned to Chicago and began operating he felt the necessity of modifying the operation and these modifications had been suggested to him in doing fifty intracapsular operations without Dr. Smith and his assistant. He believed, therefore, the technic he had described was the safest yet devised both for good operators as well as for beginners.

Gram Negative Diplococci in the Conjunctiva.

Dr. Robert Blue selected this subject as an entrance thesis, it having been suggested to him by the finding of Gram negative diplococci from smears from a case of conjunctivitis which proved to be micrococcus catarrhalis on staining and cultural growths. After briefly outlining the laboratory technic, the limits of variability of this organism were discussed. Emphasis was laid upon the necessity and advantage of classifying bacteria according to groups or families rather than as individuals. The basis of this grouping is found in the usual habitat, morphology, staining reaction, cultural characteristics and agglutination phenomena of the bacteria.

The members of the group denominated Gram negative diplococci, that is, the micrococcus catarrhalis, meningococcus intracellularis and the gonococcus were then individually discussed from both the clinical and laboratory standpoints, the literature on these points being freely quoted.

The paper closed with certain clinical deductions, among which were the necessity of treating any purulent conjunctivitis containing Gram negative diplococci, resembling the gonococcus, as a gonorrheal conjunctivitis pending a definite diagnosis, and the necessity of guarding against a diagnosis of mild gonorrheal conjunctivitis without using exhaustive cultural and laboratory tests.

DISCUSSION.—Dr. George F. Suker said that many cases diagnosed as gonorrheal ophthalmia, and said to have gotten well in four or five days, were not true cases of this disease. Gonorrhea, whether it involves the conjunctiva or urethral mucous membrane, would not get well in two or three days, so that the time limit for the cure of the disease would eliminate gonococcus infection.

Dr. Thomas Faith stated that, after hearing the paper, he was more and more impressed with the little value that one could attach to the ordinary slip-shod bacteriological work done in the office, and that if any of this work was to be done at all, it should be done by a thoroughly trained expert.

Dr. Wesley Hamilton Peck called attention to a paper presented by Professor Noguchi in which he brought out the same line of thought in regard to the differentiation of the spirocheta pallida from other organisms that might be confused with it. Later, about two years ago, Rosenow presented a paper before the Chicago Medical Society in which he demonstrated conclusively the possibility of the pneumococcus being transformed into a streptococcus under certain changing environment.

He thought the Society should thoroughly appreciate Dr Blue's continuation of this subject in reference to ophthalmology.

Paul Guilford,
Secretary.

CHICAGO OPHTHALMOLOGICAL SOCIETY.
RICHARD J. TIVNEN, M. D., PRESIDENT.
April 19, 1915.

Paralysis of Both External Recti.

Dr. William H. Wilder exhibited a little girl, seven years of age, perfectly healthy, who, while riding a bicycle, was thrown over the handle bars and struck against a wagon, injuring the right malar bone. She was not rendered unconscious, but somewhat stunned. There was hemorrhage from the left ear. The ear drum was ruptured, and there was considerable bleeding from this ear. She was nauseated soon after the injury, and about four or five hours following the injury it was noticed by her mother that her eyes were crossed. There was distinct and complete paralysis of the right external rectus, and almost complete paralysis of the left external rectus; otherwise the eyes were in every way normal. The media were clear. The eye grounds were normal, and she had vision of 20/20 or better in each eye without correcting glasses.

The fact that the paralysis did not occur immediately, but occurred some four or five or six hours after the receipt of the injury would seem to suggest it was not a fracture of the bone that caused injury of the nerve that passes over the tip of the deepest portion, but it was more than likely due to the hemorrhage that resulted from a rupture of some of the small vessels in the meninges. Possibly this explained the paralysis of the left external rectus as well as that of the right. He brought this forward as a suggestion and as the more probable explanation of the condition, and if so, it might hold out a more favorable prognosis than if the nerve itself had been cut, because then there would not be so much hope of regeneration and recovery would be longer delayed.

His experience with these cases was that he had only seen a few of them, but never saw a double one before. He had seen cases of injury of the sixth nerve from blows, both from fracture at the base of the skull and from a blow on the side of the head. The prognosis in those was fairly good. Recovery ensued anywhere from three to seven or eight months.

DISCUSSION. Dr. Wesley Hamilton Peck said the drum membrane might have been ruptured and hemorrhage from the ear been due to a fracture of the petrous portion of the temporal bone.

As to the sixth nerve being involved, he thought some light might be thrown on this by taking X-ray pictures in the same position they were taken over the mastoid, tipping the head, so that one could only get one temporal bone in the picture. If stereoscopic X-ray pictures were taken they would no doubt assist materially in showing if there was fracture of the temporal bone.

Dr. Brown Pusey stated that some three or four years ago a similar case came under his observation, the patient being a boy, fourteen years of age. He was thrown off of a horse. He made a recovery at the end of three months. In this case he attributed the paralysis to a hemorrhage at the base, catching both nerves along the course up under the pons.

Dr. Wilder, in closing, said that X-ray pictures had been taken by Dr. Potter, but he had not had an opportunity to study them as yet, but would soon do so. With stereoscopic X-ray pictures, one might be able to see a fracture if there was one present.

Ulcer of the Cornea Complicating Cow-Pox Infection.

Dr. J. Sheldon Clark stated that he did a good deal of his work in a dairy district, and it was his fortune to see two cases of ulcer of the cornea complicating cow-pox. In the first case the eye was lost.

The case he reported was that of Mr. A. L., 32 years of age, who came to him last spring for an ulcer of the cornea. He had a cow-pox infection at the time he came and had a number of vesicles on different parts of the body, particularly on the hands and face. He had a large corneal ulcer which covered about one-half of the cornea. This healed under treatment which lasted for a few months. In a dairy district one occasionally saw such infections on the hand, but he had only seen two of them infecting the eye. In this case the systemic symptoms were marked and were similar to those of smallpox. Patient also had pigmentary nevus in one eye.

Keratitis Petrificans.

Dr. Harry S. Gradle presented a case for Dr. Young, of Burlington, Iowa, who unfortunately was unable to be present. The patient suffered from a foreign body in the left eye for about twenty months. Two days after the foreign body entered the eye an ulcer appeared which lasted for two months. Following the ulcer there remained a scar on the left cornea. This had not changed markedly in size in the past fifteen months, although yellow oxide of mercury, massage, and iodids internally, and practically everything else had been resorted to except surgical interference. This scar was rather dense, involving the superficial areas of the cornea. The eye was painful, and the man could not get very much better vision. The patient wanted to get relief, and the speaker expressed a desire to have the case discussed and, if possible, some suggestions offered with reference to treatment.

DISCUSSION. Dr. George F. Suker, in discussing the case presented by Dr. Gradle, said that calcareous degeneration of the cornea or lime deposits did not occur in an eye that was chronically inflamed, or had chronic inflammation of some kind or another. If the eye was let alone, he was under the impression that the patient would lose it entirely and it would have to be enucleated on account of pain. He had had just such an experience in two cases, and had he known then what he knew now he might have saved the sightless eye which was better than a glass eye by having this portion of the cornea excised and a corneal graft transplanted, or the whole thing might be excised with a cataract knife, and covered over with a conjunctival flap. In this way the eye could be saved and the pain stopped.

Dr. Wilder said it seemed to him that the pupil was not more than half covered, and before attempting anything so radical as a grafting operation, which is difficult and uncertain, he thought it would be proper to excise this portion of the cornea by curettment, and then possibly add to that the cautery. Both methods combined, curettment and then cauterizing this area, might destroy the nerve endings, and relieve the man entirely of the pain, and make a good white scar. It did not make any difference so far as the sight was concerned if it did not encroach any more upon the pupillary area of the cornea. He thought this was the measure to try before attempting a more difficult keratoplasty.

Dr. Harry S. Gradle mentioned a method which was advocated years ago, namely, to trephine an area about the size of the scar, taking in clear corneal tissue about half the depth of the cornea, turning the trephine button on itself, and clearing away some of the scar from the pupillary area. The man who had suggested this method had met with success in several cases, but the turned button had remained. If there was a possibility of doing this the pain would be less.

Optic Neuritis.

Dr. Emory Hill presented and reported a case of optic neuritis. The patient, a man, 29 years of age, consulted him last October with headaches which were relieved by refraction. Patient had approximately one and a half D. of hyperopic astigmatism in the eye. The unpleasant thing was the appearance of the eye grounds. The left eye had a swelling of the disc of 2½ D. The right eye had no swelling of the disc, but a distinct arteriosclerosis of the retinal vessels. The patient stated that at intervals for five years he had been told he had something interesting about his left eye. He had had examinations made, but nobody had discovered anything wrong except he had a peculiar nerve. His vision with correction was 6/4 in each eye. In October there was no enlargement of the blind spot. When he presented the patient last month before the society he thought the swelling of the left nerve head might be congenital, a so-called pseudo-optic neuritis. Since last month the right disc, which was not swollen in October, had become blurred and swelling had come on, which was at least 2 D. in height. The swelling in the right eye was more typical of optic neuritis than in the left. The vessels dipped in and out of the edematous area. Vision was still 6/4 with correction, but there was a distinct enlargement of the blind spot for red and a trifling enlargement for blue and white in each eye. A Wassermann was negative. Careful physical examination showed the urine negative, and blood pressure normal for his age. Patient had a rather full and firm radial artery. He had a sclerotic condition of the vessels in the right eye. His sinuses, nose, tonsils and teeth were normal.

The diagnosis was interesting. Unquestionably the condition in the right eye was a true neuroretinitis, while the condition in the left eye, he was inclined to think was the same, and not a pseudo neuroretinitis as he supposed at first.

DISCUSSION. Dr. George F. Suker stated that Dr. Hill's case resembled the case of a woman whom he presented to the society two months ago, where the condition began in one eye and then traveled to the other. It extended over a period of a number of years. Whether the two cases were alike he could not say, nevertheless, one should make a skiagram.

Dr. Brown Pusey recalled one case in which there was a pseudo optic papillitis in one eye but not in the other.

Dr. Casey A. Wood said that when Dr. Hill described his case he thought it might be one of pseudo optic neuritis, as such cases had been described in the literature; but with enlargement of the blind spot he thought one was justified in believing it was a case of optic neuritis, with well preserved central vision, and without any limitation of the peripheral fields.

Dr. William H. Wilder did not think that all cases of optic neuritis were symmetrical. There was apt to be asymmetry in these cases as in other anomalies, but in this particular case he thought it could be excluded from Dr. Hill's observation of the swelling. The optic nerve head in the right eye was elevated 2 D. and it covered 2½ D. In the cases of pseudo optic neuritis he had seen there was a considerable connective tissue element in the retina immediately surrounding the margin of the optic disc which gave it the simulation of optic neuritis. However, a more careful study of the case might indicate it was not a real inflammatory process or an edematous process at the head of the optic nerve. This case had more the appearance of a real optic neuritis, and he thought it must be that.

Birth Injuries of the Eye.

Dr. C. P. Small stated that a study of recorded cases showed a general agreement in the following particulars: Practically all have followed a difficult instrumental delivery, although cases have been reported of an unusually long confinement, associated with a contracted pelvis, where injury occurred when no instruments were used. One eye alone was generally affected. The injury was usually associated with other signs of traumatism, as abrasions of the skin, subconjunctival or retinal hemorrhage, hyphemia, etc., and that a more or less characteristic form of corneal opacity was usually present. The most frequent of all forms of birth injuries are those involving the cornea.

After going extensively into the literature of birth injuries of the eye, Dr. Small reported the following case:

The patient was 11 years of age, the younger of two children. Her mother says it was a breech presentation, that after a very long and painful confinement she was given chloroform, and the child delivered with forceps. There was an extensive perineal laceration. The child weighed 14½ pounds. At the present time there are scars on both sides of the head over the parieto-temporal areas, made by the forceps, the one on the right side showing that the wound had been deep, while the tip of the same blade cut the lower right eye-lid, resulting in the scar which was shown by a drawing. There are three distinct linear opacities extending vertically across the entire cornea. In addition to the corneal injury there is a partially opaque lens, dislocated upwards. There is the tremulous iris which accompanies this condition. There is atrophy of the optic nerve, and a slightly increased intraocular tension. Vision was reduced to counting fingers at four inches. Vision in the left eye, with a + 0.50 cylinder, axis 90° is 20/20.

The lower edge of the lens appears less curved than usually appears in this condition, and much darker in color than the remaining portion of the lens. A similar condition was seen in a case reported by Würdemann where there was a partial upward dislocation of the lens. A brown line extended across the lens, evidently the remains of a blood stain from a hyphemia which was present after birth. In addition to the cases already mentioned, this peculiar and unusual form of linear opacity due to rupture of Descemet's membrane at the time of birth, has been observed by Braav, Green, Henderson and others.

DISCUSSION. Dr. Wesley Hamilton Peck had seen a case of birth injury of the eye similar to the one reported by the essayist. He exhibited a case to the society several years ago of extreme proptosis following delivery. Subsequently this condition receded and assumed a normal position.

Dr. J. Sheldon Clark stated that two weeks ago he was called by a general practitioner to see a young child some three days old, presenting a peculiar condition of the cornea. The cornea looked as white as though carbolic acid had been dropped on it. The doctor was perturbed in regard to it and asked whether delivery had anything to do with it. In looking up the literature he had found there were such cases. However, the condition cleared up in three or four days' time.

Dr. Small, in closing, stated that in his paper there were a number of references to other forms of birth injuries, especially those of the cornea and temporary opacities. There was one case reported where the eye was partially lying on the cheek at the time of birth. There were also cases of strabismus from injury of a muscle, as well as in other portions of the body. All these came under birth injury proper.

The Sclero-Corneal Seton in the Treatment of Glaucoma; a Preliminary Report.

Dr. Casey A. Wood stated that without attempting at this time to develop or discuss the arguments for such a desirable end, after some preliminary lower animal experimentation the operation he was about to describe was done on two human subjects. The results were so encouraging that he now presented one of the subjects operated on and hoped the method might commend itself to the judgment of the members so as to give it a trial.

For the purpose of this experiment cases were chosen that had failed of relief at his own and at other's hands by the usual operative measures.

The first case was that of a boy, aged 11, first seen on November 28, 1913.

(Continued.)

THE OXFORD CONGRESS

Mr. Sydney Stephenson, Master of the Oxford Ophthalmological Congress for 1915, has kindly sent us the following item:

It speaks volumes for the enterprise of this Congress that the annual meeting was held on July 15th and 16th last at Keble College, Oxford, much as though Europe were not plunged into a calamitous and wicked war. *Mais la science n'a pas des frontières.* The feature this year was the discussion on "Industrial diseases and accidents," ably opened by Dr. Frank Shufflebotham, of Newcastle-under-Lyme. Among the numerous communications on miners' nystagmus, industrial cataract, plumbism as it affects the eye, and siderosis, special mention should be made of one contributed by Dr. Edgar L. Collis, of the Home Office, on "eye injuries caused by occupation: their prevention and first-aid treatment." The discussion on these various subjects was maintained with great vivacity by the members. The presence of Dr. T. M. Legge, of the Home Office, added much interest to the debate, and elicited many interesting facts from his unrivalled experience of industrial conditions.

Sir St. Clair Thomson, of London, gave an interesting lantern address on the surgical anatomy of the nose, and the accessory sinuses, in relation to the eye and orbit. Sir Mackenzie Davidson, also of London, demonstrated the use of the telephone detector for foreign metallic bodies in and about the eye, more especially in the orbit. Mr. W. H. H. Jessop had an opportune paper dealing with the question of papilloedema following injuries of the vault of the skull in the present war.

This lesion occurs in a large percentage of injuries to the skull (50% to 70%) and seems always to indicate a fracture, often old, of the inner table of the skull. It may be the only means of recognizing the condition.

Mr. Stephen Mayou delivered an address on "Mooren's ulcer of the cornea," and showed excellent pathological specimens of the disease upon the screen. He concluded that the condition was due to necrotic processes of the superficial layers of the cornea as a result of defective nutrition.

Lieut.-Col. R. H. Elliot gave an address upon the operation of couching, as practiced in India, and demonstrated a remarkable series of eyes lost as the result of that ancient procedure. The discussion went to show that in a small class of case there was still a place for "couching," practiced under modern aseptic conditions. Mr. T. Harrison Butler's paper on "The tragedy of sclerostomy," which elicited much discussion, is printed in the August issue of *The Ophthalmoscope*.

In the scientific museum there were exhibits by Mr. Sydney Stephenson and Lieut.-Col. Elliot, F. W. Edridge-Green, J. Burdon-Cooper, Percival J. Hay, R. J. Coulter, W. H. H. Jessep, Philip H. Adams, N. C. Ridley, John Gray Clegg, C. J. Russ Wood, S. E. Whitnall, J. H. Sutcliffe, Robert Fagin, of Memphis *(in absentiâ)*.

At the Eye Hospital cases were shown and operations demonstrated by Mr. Philip H. Adams, Dr. William Robinson, Mr. N. C. Ridley, Mr. E. H. E. Stack, and Mr. Bernard Cridland, the honorary secretary of the Congress.

A word should be added about the social side of the Congress, which, as usual, was well maintained. Mr. Robert W. Doyne, the past Master of the Congress and its founder, presided at the dinner of the Congress, which was held on the 15th of July in the Hall of Keble College. On the 16th there was to be a garden party in the gardens of Exeter College, but since the elements were unkind, the members of the Congress were received by the Rector of Exeter and Mrs. Farnell in the College Hall. The Rector was good enough to explain the various points of interest, not only of the Hall, but of the College Chapel as well. That evening there was a smoking concert in the junior common room at Keble College.

For the first time in the history of the Congress, to the unfeigned regret of everybody, not a single American citizen was present. Foreigners, too, were conspicuous by their absence. What the meeting lacked in numbers was, however, more than compensated by the enthusiasm of the members.

The optometrists of Ohio have attempted to enjoin the state medical board from classifying them as "limited practitioners of medicine and surgery" under the new Platt-Ellis law —where they belong.

Attorney General Edward C. Turner will represent the medical board in this action, as its official legal advisor. An able presentation of the case will mean the permanent settlement, for all time, of the class who presume to treat eye diseases, and who persistently refuse to qualify by education for that important field of the healing art.—*Ohio State Medical Journal.*

NEWS AND NOTES.

Personals and items of interest should be sent to Dr. Emory Hill, 30 North Michigan avenue, Chicago, Ill.

As these columns go to press on the 15th of the month previous to publication, contributors will kindly send in their items before that date.

Dr. Hiram Woods of Baltimore is spending his vacation at Blue Ridge Summit, Pa.

Dr. Allen Greenwood of Boston is serving with the Harvard Surgical Unit in England.

Drs. Frank S. Owen and Wm. P. Wherry have been appointed oculists to the Union Pacific system at Omaha, Neb.

The Department of Health of New York City reports 1,128 cases of defective vision among 11,468 children examined.

Dr. Cassius D. Wescott of Chicago spent the month of July in the woods of northern Michigan.

A site has been offered near Birmingham, Ala., for the proposed State School for Manual Training for the Blind.

Dr. Mark J. Schoenberg has been appointed instructor in Ophthalmology in the College of Physicians and Surgeons, New York.

Dr. Wm. Evans Bruner has been elected Professor of Ophthalmology, with vote and seat in the faculty, in Western Reserve University, Cleveland, Ohio.

Dr. Alexander B. Osborne of Hamilton, Ont., is chief of the Eye and Ear Department of the Duchess of Connaught Red Cross Hospital, at Cliveden, England.

Dr. Carl Fisher has been appointed associate professor of Ophthalmology in the Graduate School of Medicine of the University of Minnesota since the merger with the Mayo Foundation.

Dr. Wm. Campbell Posey of Philadelphia will be in Rhode Island on his vacation until September 15.

Dr. Samuel D. Risley of Philadelphia is spending the summer vacation in the mountains of Pennsylvania.

Dr. Max J. Stein of Philadelphia is recovering from a severe injury of his eye, sustained by a blow of a golf ball.

Dr. Hanford McKee of Montreal. Lieutenant-Colonel in the Canadian army, has charge of a 400 bed hospital at Wineraux, France.

The optometrists of Ohio are reported to have raised a large sum of money to fight the state law which imposes a tax of $25 upon non-medical healers.

A new trachoma hospital has been opened at London, Ky., with Dr. John McMullen of the U. S. P. H. service in charge. Another trachoma hospital has been erected in Coburn, Va.

The new officers of the Section on Ophthalmology of the A. M. A. are Dr. Walter R. Parker, chairman; Dr. Vard H. Hulen, vice-chairman, and Dr. George S. Derby, 7 Hereford St., Boston, Mass, secretary.

The Inland Steel Company of Indiana Harbor, Indiana, is publishing a Safety Bulletin for its employees. Advice is given about the use of the eyes, wearing protective spectacles, and seeking immediate treatment for injuries.

The Vienna Neue Freie Presse has collected a fund for the relief of blind soldiers amounting to more than 400,000 kronen. Prof. von Grosz of Budapest has offered a prize for the best contribution on the subject of aiding the blind.

Drs. H. Bert Ellis of Los Angeles and W. L. Noble of Chicago are members of the House of Delegates of the American Medical Association. Dr. Walter R. Parker of Detroit is the representative of the Section on Ophthalmology to the House of Delegates.

Dr. Willis O. Nance of Chicago has returned from a trip to the Pacific coast and Mexico.

Dr. Francis Delafield of New York died recently at the age of 73. This distinguished pathologist was once surgeon to the New York Eye and Ear Infirmary.

The Idaho State Board of Health has inaugurated a campaign against infant blindness. Nitrate of silver solution is supplied free in suitable ampules to those entitled to use it.

Dr. S. Lewis Zeigler was the chief speaker on the subject of neighborhood instruction in sanitary living at the recent carnival of the Home and School League of the William Cramp School in Philadelphia.

The Ohio State Commission for the Blind has recently paid respect to the memory of the late Dr. Mark Stevenson by resolutions expressing appreciation of his work in connection with this commission.

The American Academy of Ophthalmology and Oto-Laryngology will meet at the Hotel Sherman, Chicago, October 5-7, under the presidency of Dr. Joseph C. Beck. On the day before the meeting and the two days following clinics will be held at several Chicago hospitals.

According to the daily press the French government is seeking in this country a large supply of mica to make lenses for the soldiers in the trenches. Mica is said to protect the eyes from gas and acid bombs, not to break readily, and not to be susceptible to injury by heat.

In the announcement of the Medical Department of the University of California at Los Angeles, several appointments of ophthalmologists appear: Dr. H. Bert Ellis is consulting ophthalmologist to the faculty: Dr. George H. Kress has charge of the eye service in the Los Angeles County Hospital; Drs. F. D. Bullard, W. H. Dudley, L. Mitchell, F. J. Old and Lloyd Mills are ophthalmologists to the Graves Memorial Dispensary.

Dr. Daniel W. White of the U. S. Trachoma Service and Dr. Peter C. White formerly of the Manhattan Eye and Ear Hospital, New York, have located in Tulsa, Okla., where they will practice ophthalmology.

More than $500,000 has been secured for erecting a new medical college building for the University of Cincinnati. This building will be upon the grounds of the Cincinnati General Hospital with which it is connected.

The foreign literature continues to contain many references to eye injuries in war. Advice is given to the general surgeon as to the importance of early treatment of wounds, cleansing of the conjunctival sac, inspecting the cornea for erosions, and the bandaging of clean eyes.

An investigation of the proportion of spectacle wearers in the German army shows that approximately 1,750 men in an army corps are dependent upon glasses. In a group of 386 examined, 214 were myopic, 74 hypermetropic, 12 presbyopic, 81 astigmatic. This indicates the high percentage of myopia as would be expected, but the comparatively few astigmatic eyes found is not a compliment to German methods of refraction.

A western newspaper contains an interesting discussion, by a romance-loving eastern medical writer, of the psychology of wearing shell-rimmed spectacles. The psycholanalytic studies of Freud have proven indisputably that the present fad is the manifestation of a suppressed desire to look like the owl, the symbol of wisdom! It goes without saying that the wearer never acknowledges this desire, but it is unmistakable to the all-seeing Freudian eye.

The following deaths of ophthalomologists are announced:

Dr. Carl Shulin of Billings, Mont.
Dr. Josiah Jones of Tacoma, Wash., aged 50.
Dr. William S. Armstrong of Portland, Orgeon, aged 52.
Dr. Oswald W. Hasker of Wyomissing, Pa., aged 39.
Dr. William Hilliard of Denver, aged 70.
Dr. Benjamin Gleeson of Danville, Ill., aged 38.

CHICAGO EYE CLINICS.

Hour.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
9 A.M.	Richard S. Pattillo (P.-G.) G. W. Mahoney (Poli.) R. B. Stephenson (P.-G.) Carl Wagner (E.E.N.T.)	•Geo. F. Suker (P.-G.) C. H. Francis (Poli.) A. Duncan (P.-G.) A. G. Wippern (E.E.N.T.)	W. F. Coleman (P.-G.) S. M. Hager (Poli.) H. N. Lyon (P.-G.) Carl Wagner (E.E.N.T.)	G. W. Mahoney (Poli.) Rich'd S. Pattillo (P.-G.) R. B. Stephenson (P.-G.) A. G. Wippern (E.E.N.T.)	C. H. Francis (Poli.) R. B. Stephenson (P.-G.) J. A. Cavanaugh (E. E. N. T.)	S. M. Hager (Poli.) C. W. Hawley (P.-G.) H. J. Morlan (P.-G.) A. G. Wippern (E.E.N.T.)
10 A.M.	Brown Pusey (N.W.U.) Geo. T. Jordan (N.W.U.) Robert Blue (N.W.U.) Every day, 10-12 A. M. Harry Gradle (E.E.N.T.)	J. R. Hoffman (E.E.N.T.)	Harry Gradle (E.E.N.T.)	J. R. Hoffman (E.E.N.T.)	Harry Gradle (E.E.N.T.)	J. R. Hoffman (E.E.N.T.)
1 P.M.	M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) Emily Selby (Inf.) •H. W. Woodruff (Inf.) •Oscar Dodd (Inf.) C. A. Leenheer (Inf.) D. W. Eiss (Inf.) E. R. Cressley (Inf.) C. C. Clement (Inf.) E. V. L. Brown (County) and Geo. F. Suker (County) Daily, 2:30 P. M. W. A. Fisher (E.E.N.T.)	•Chas. H. Beard (Inf.) W. Allen Barr (Inf.) E. K. Findlay (Inf.) Wm. E. Gamble (Inf.) J. B. Loring (Inf.) S. L. McCreight (C.C.S.) Robt. Von der Heydt (Inf.) L. G. Hoffmann (Inf.) A. P. Hunneman (Inf.) M. Goldenberg (Inf.) Francis Lane (Inf.) H. Walker (Inf.) W. A. Fisher (E.E.N.T.)	M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) Emily Selby (Inf.) •H. W. Woodruff (Inf. •Oscar Dodd (Inf.) C. A. Leenheer (Inf.) D. W. Eiss (Inf.) E. R. Cressley (Inf.) C. C. Clement (Inf.) Oliver Tydings (E. E. N. T.)	•Chas. H. Beard (Inf.) W. Allen Barr (Inf.) •Frank Allport (St. Luke's) •Frank Brawley (St. Luke's) E. K. Findlay (Inf.) Wm. E. Gamble (Inf.) •Paul Guilford (St. Luke's) •Casey Wood (St. Luke's) •T. A. Woodruff (St. Luke's) J. B. Loring, (Inf.) S. L. McCreight (C.C.S.) Robt. Von der Heydt (Inf.) L. G. Hoffman (Inf.) A. P. Hunneman (Inf.) M. Goldenberg (Inf.) Francis Lane (Inf.) H. Walker (Inf.) W. A. Fisher (E.E.N.T.)	M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) Emily Selby (Inf.) •Oscar Dodd (Inf.) C. A. Leenheer (Inf.) D. W. Eiss (Inf.) E. R. Cressley (Inf.) C. C. Clement (Inf.) H. W. Woodruff (Inf.) W. A. Fisher (E.E.N.T.)	•Chas. H. Beard (Inf.) W. Allen Barr (Inf.) E. K. Findlay (Inf.) Wm. E. Gamble (Inf.) J. B. Loring (Inf.) S. L. McCreight (C.C.S.). Robt. Von der Heydt (Inf.) L. G. Hoffman (Inf.) A. P. Hunneman (Inf.) M. Goldenberg (Inf.) Francis Lane (Inf.) H. Walker (Inf.) Oliver Tydings (E. E. N. T.)
3 P.M.	•Wm. E. Gamble (U. of I.) Wm. H. Wilder (Rush) H. S. Gradle Daily 3-5 (E. M. D.)	R. J. Tivnen (M. H.)	W. Allen Barr (C.C.S.) •Wm. E. Gamble (U. of I.)	Wm. H. Wilder (Rush) R. J. Tivnen (M. H.)	W. Allen Barr (C.C.S.)	Geo. F. Suker (P. G.) 2-5 H. Cuthbertson A. Duncan
4 P.M.	W. F. Coleman (P.-G.) H. N. Lyon (P.-G.) 2-5	C. W. Hawley (P.-G.) 2-5 J. F. Campbell (P.-G.) H. J. Morlan (P.-G.)	J. B. Loring (U. of I.) E. K. Findlay (U. of I.) G. F. Suker (P.-G.) 2-5 H. Cuthbertson (P.-G.)	C. W. Hawley (P.-G.) J. F. Campbell (P.-G.) H. J. Morlan (P.-G.)	W. F. Coleman (P.-G.) 2-5 H. N. Lyon (P.-G.)	

•Special operative eye clinic.

ABBREVIATIONS:

C. C. S.: Chicago Clinical School, 1844 W. Harrison Street.

E. M. D.: Emanuel Mandel Dispensary, 1012 Maxwell St.

County: Cook County Hospital, W. Harrison and Honore Streets.

Inf.: Illinois Charitable Eye and Ear Infirmary, Peoria and Adams Streets.

M. H.: Mercy Hospital.

Poli.: Chicago Policlinic and Hospital, 221 W. Chicago Avenue.

P.-G.: Post-Graduate Medical School of Chicago, 2400 Dearborn Street.

N. W. U.: Northwestern University, 2431 Dearborn Street.

Rush: Rush Medical College, W. Harrison and Wood Streets.

St. Luke's: St. Luke's Hospital, 1416 Indiana Avenue.

U. of I.: College of Medicine, University of Illinois, Congress and Lincoln Streets.

THE
OPHTHALMIC RECORD
A MONTHLY REVIEW OF THE PROGRESS
OF OPHTHALMOLOGY

Vol. XXIV CHICAGO, OCTOBER, 1915 No. 10, New Series

ORIGINAL ARTICLES

PEMPHIGUS OF THE CONJUNCTIVA.*

Report of Two Cases.

BY
EDWARD STIEREN, M. D., F. A. C. S.,
PITTSBURGH, PA.

Pemphigus of the conjunctiva is a rare condition occurring 5 times in 45,000 ophthalmic patients, according to Franke (18), 2 times in 22,000 ophthalmic cases according to Pergens (28).

Its occurrence is almost invariably incident to a general bullous eruption of the body. We may find it accompanying epidermolysis bullae, bullous dermatitis, pemphigus vulgaris, acute pemphigus and pemphigus neonatorum syphiliticus.

The frequency of ocular involvement in pemphigus of the skin is apparently not great since Hebra did not observe it once in 200 cases (27).

The stage of vesication is rarely observed in the eyes since the epithelium of the conjunctiva is so much more delicate than that of the skin that the vesicles soon burst and the ocular disease appears as denuded areas or recent cicatrices, soon followed by great contraction which gives the eye a scalded and lifeless appearance.

According to Bordley (6) the conjunctival lesions may appear as petechiae, becoming confluent in the ocular conjunctiva but remaining discrete in the lids.

I have observed two cases of pemphigus of the conjunctiva in approximately 20,000 ophthalmic patients.

Case 1. Referred by Dr. W. J. Stewart, August 1, 1907. J. L. S., white, farmer, age 47. Eyes became affected a month or six weeks before during an attack of dermatitis bullosa of his entire body. The attending physician stated that the odor from the patient in this condition was overpowering.

---

*Read before the Fifty-first annual meeting of the American Ophthalmological Society, New London, Conn., July 6-7, 1915.

Ocular examination. Intense photophobia. Moderate entropion of both lower lids. Conjunctiva glistening and shrunken with slight discharge of a muco-purulent character which contained only the usual conjunctival flora. A symblepharon between the lower lid and eyeball extending from the inner canthus and occupying about one-third of the sulcus in the left eye and several ribbon-like similar adhesions in the right eye.

Both corneae diffusely cloudy, the left being encroached upon by what appears to be an internal pterygium minus the usual blood vessels. The patient suffered intensely from corneal irritation which could however be relieved with holocain. No staining of the cornea with fluorescein, but several small areas of the conjunctiva in each eye were denuded.

The patient, a syphilitic, had been taking enormous doses of potassium iodid. To this was added mercury bichlorid gr. 1/8 three times daily. Locally, 20 per cent argyrol every three hours, 10 per cent dionin and 1 per cent atropin three times daily were employed for two weeks.

The photophobia gradually improved under this treatment and it became possible to estimate his vision at the end of two weeks which was approximately 6/80 with either eye.

Sept. 5, '07, he had perfect control of the eyes in sunlight with smoke glasses on and without glasses indoors. Vision had improved to 6/36 with the right eye and 6/20 with the left, the corneal haze having cleared up to this extent. A canthoplasty in each eye with dissection and turning in of the symblepharons resulted in satisfactory amelioration of the entropion.

Sept. 14, '07, atropin was discontinued and pilocarpine in a weak solution substituted. Mercury bichlorid had steadily been exhibited in increasing doses, the point of tolerance being ½ grain three times daily. The use of dionin was also persisted in.

Oct. 30, the patient returned to his home in the country with instructions to continue both local and internal treatment. R. V. = 6/36 +; L. V. = 6/20 +.

Subsequently he suffered a violent return of his previous skin disease and in a despondent mood committed suicide by shooting.

Case II. Charles S., white, age six years. Admitted to the South Side Hospital Feb. 10, 1915, suffering with a number of skin lesions over almost the entire surface of the body, including the scalp and face, and inability to open his eyes.

His parents supplied the following history: General health is good, appetite poor, bowels regular. Has had none of the acute exanthemata but suffered an attack of pneumonia in infancy. Child was vaccinated about Sept. 15, 1914. About four weeks later he developed a large bleb on the dorsal side of the left forearm followed by similar lesion on the posterior surface of the left ear, then numerous blebs appeared on the arms, legs and trunk. These varied in size from a pin head to a pea and would rapidly coalesce forming at times blebs as large as a walnut which would rupture spontaneously, liberating a large quantity of serum and followed by raw bleeding surfaces which would take on thick incrustations.

Similar lesions occurred on the eyelids and in the anterior nares. The child persisted in picking off the crusts on the eyes which refreshened the lid margins and resulted in the lids growing together.

Upon admission: Child is irritable, underweight and anaemic. Large areas of the body are covered with lesions varying in size from a dime to a dollar covered with red incrustations. No bullae in evidence on admission.

The eyelids, especially near the margins, are covered with tenacious incrustations which leave bleeding surfaces when removed. There is marked entropion of both upper and lower lids. The lids cannot be separated, being united by a continuous band of adhesion occupying the outer half of the left lids, the inner half of the right lids.

Under ether the adhesions between lids were divided and an external canthoplasty was performed in each eye. Numerous symblepharons had formed between the lids, both upper and lower, of both eyes. These were dissected up and the defects covered, the conjunctiva being so friable and shrunken that it had to be handled with the greatest care.

The right cornea was found to have a general diffuse superficial haziness while deep in the central corneal stroma was a yellow macule about three by four millimeters in diameter The left cornea had the same superficial haze as the right but the stroma was clear.

The after management of the child was fraught with the greatest difficulty on account of the blepharospasm which was so intense that all endeavors to cleanse and treat the eyes would result in the integument of the upper lids breaking down (literally peeling off) when forcible opening with the fingers was attempted, to be followed by granulating surfaces which bled profusely whenever disturbed.

Finally after two months of treatment the raw lesions about the lids became covered with epithelium and the external wounds healed.

The conjunctiva now was pale, glistening and shrunken and the left cornea had developed the same yellow macular degeneration first noted in the right eye.

The child can at times overcome his blepharospasm and will open his eyes momentarily but it is evident that he is quite blind.

A number of bullae appeared on his body, mainly on the lower arms and legs, during his stay in the hospital. The serum from these bullae was repeatedly examined and cultures made in the laboratory, the organisms present being diplococci, slightly larger than gonococci. There was an occasional rise in temperature to 100° which was invariably followed by the appearance of fresh bullae.

Repeated examinations of the urine were negative as were also Noguchi and Wassermann tests. In spite of the latter the patient received mercury in the form of gray powder and Fowler's solution persistently for two months.

Etiology.

Pemphigus of the skin in any of its forms may accompany or follow many conditions but there does not appear to be any particular predisposing factor. One of my cases occurred in a syphilitic. This has been observed also by v. Marenholtz (35) and by Fehr (17).

In my other case the disease appeared four weeks after vaccination. In regard to this factor Bowen (10) who in 1901 reported six cases of bullous dermatitis following vaccination in children states: "I have emphasized the fact that I cannot prove that they were caused or influenced by the vaccination." Howe (21) in 1903 reported ten cases of bullous dermatitis in adults following vaccination, six of whom died. Because of this high mortality he is of the opinion that the disease was the result of infectious material introduced at or after vaccination. Pernet and Bullock (29) report seventeen cases of an acute bullous eruption, the infection, probably a specific micro-organism, taking place through a wound. Eight of these cases occurred in butchers and the mouth, palate, eyes and nostrils were always affected. In eight of their other cases the occupation of the patient brought him in contact with animals.

These observers call attention to the fact that bullous eruptions occur not infrequently in horses, cattle, dogs and pigs. Ballard (2) reports a case of pemphigus of the skin, mouth and throat of a young man who contracted the disease through an open wound on the dorsum of the hand while milking cows who had bullae on their udders. Corlett (14) reports a case of erythema circinatum bullosum et hemorrhagicum following a gunshot wound and terminating fatally from streptococcic infection.

Most of the reporters remark on the intense fetid odor. (This was present in my first case but not in the second.)

Bacteriology.

Xerosis bacilli in the latter stages of pemphigus of the conjunctiva are usually present in large numbers. It is not probable that they have anything to do with the condition as they are found frequently in the conjunctival sac in health and simply find in the degenerated epithelium and in the denuded areas favorable soil for growth.

In my first case examination of the discharge from the eyes showed nothing significant. In the second case serum from freshly formed bullae on the skin repeatedly revealed the presence of diplococci about one-third larger than gonococci, staining by Gram's method, and apparently the same as those found by Demme (16), Dahnhardt (15) and Bleibtrau (5).

The organism they describe occurs as a diplococcus, much resembling the gonococcus but larger, its two opposing surfaces being flattened. It grows well on agar and serum, forming round white colonies, and stains well with all aniline dyes and by Gram. Other observers have found streptococci and staphylococci but these when found are usually regarded as accidental infections.

Pathology.

A comparatively recent and excellent histological study of the pemphigus of the conjunctiva is that of Adam (1) who finds that the changes are decidedly different than those found in pemphigus of the skin. The difference consists mainly, in the specimens examined by him, in the absence of bullae; an inflammation of the subepithelial and adenoid elements, later passing into cicatrization with raised nodules on the surface of the conjunctiva.

The shrinking of the conjunctiva he finds is not due to plastic adhesions of ruptured vesicles in the supporting basal membrane but to cicatricial changes in each nest of infiltration. The bulbar conjunctiva soon becomes tightly adherent to the sclera at the site where the nodules occur, with a shrinking of the same, while the palpebral conjunctiva retains more or less of its laxness. This results in the formation of vertical folds in the conjunctiva of the cul-de-sacs which look like adhesions or symblepharons and which can be mistaken for such.

Adam found in his corneal sections that the process consisted of a denudation of the epithelium followed by an irregular regeneration of exuberant granulations usually, but also occasionally by a pterygium-like encroachment of epithelium. (This was noted in the left eye of my first case.)

Bullae may occur in these overgrowths he states, and the effects of pemphigus are manifest as far back as the equator of the globe.

V. Marenholtz describes the pathology of pemphigus of the conjunctiva as he found it in sections from the eye of a thirteen-year-old syphilitic: The corneal epithelium was irregularly thickened and sent epithelial pegs of varying lengths into the corneal stroma. Bowman's membrane was absent entirely and in the parenchyma of the cornea were numerous round cells closely packed in rows. In a few fields the corneal stroma had broken down; the fibres were pushed together and stained badly. Over these fields the epithelium was quite thin and broken in places. (It is probable that the condition obtained in my second case accounting for the yellow macules in the corneal stroma.) Adam considers the raised nodules he describes as characteristic of pemphigus but v. Marenholtz states they were absent in all the sections examined in his case.

Treatment.

Fuchs states that treatment has no power to restrain the process. Arsenic administered internally has usually been the empirical treatment.

In Burk's (11) case with a positive Wassermann salvarsan was without effect.

Ogiu and Imai's (26) case resisted all therapeutic efforts even frequent treatments with radium.

In Bordley's (6) case the patient was given salvarsan and sodium cacodylate, the eyes were kept bathed in a solution of zinc sulphate and from time to time boric ointment was rubbed into the ocular conjunctiva. Later, after all treatment had proved ineffectual, anaerobic cultures, made on human muscles after the methods of Noguchi and Flexner, resulted in the isolation of a motile bacillus from which a vaccine was made and used. At first high hopes were entertained for the patient's recovery as he became wonderfully better almost at once, but the disease progressed and death occurred four months after the onset.

V. Marenholtz (35) instilled fibrolysin into the conjunctival sac twice daily for four months and states that the overgrowths of epithelium were retarded by its use.

Bane (3) states he has had good results in one case with the X-ray.

In the case of Le Roux (22), which is one of the few where bullae could be demonstrated in the conjunctiva, the cornea was covered with what resembled an onion skin which was in truth the corneal epithelium detached in large part from the underlying tissues.

This yielded with surprising rapidity to treatment with hot compresses, atropin and yellow oxide of mercury ointment. At the time of writing the cornea showed only slight opacities which caused but little reduction in the visual acuity and there had been no cicatricial contraction of the conjunctiva.

Transplantation of conjunctiva, mucous membrane and even skin has been tried but all failed with few exceptions.

In my two cases one, the syphilitic, improved under dionin. atropin and argyrol locally with mercury internally, the dionin and mercury probably being responsible for the improvement.

My other case steadily became worse in spite of everything that was used.

BIBLIOGRAPHY.

1. Adam, C.: Untersuchungen zur Pathologie des Pemphigus conjunctivae. Ziet. f. Augenheilk. Vol XXIII.
2. Ballard: Pemphigus, etc., Med. Times & Gaz., 1871, Vol. I.
3. Bane, W. C.: Pemphigus. Oph. Rec., Vol. XX.
4. Bäumler: Pemphigus conjunctivae und essentielle Schrumpfung. Klin. Monatsbl. f. Augenheilk. 1885.
5. Bleibtrau: Berlin Klin. Wochenschr. XXX.

6. Bordley, J.: Pemphigus of Conjunctiva. Oph. Rec., Vol. XXII.

7. Borysiekiewicz: Pemphigus counjunctivae vulgaris. Klin. Monatsbl. f. Augenheilk. 1879.

8. Bouchart: Pemphigus of Conjunctiva. Oph. Rec. Vol. XXX.

9. Bourgeois, Ocular Pemphigus. Union Med. du Nord-est. Vol. XXXV.

10. Bowen: Bullous Dermatitis Following Vaccination. Jour. Cut. and G. U. Dis. Vol. XIX.

11. Burk, Pemphigus of Conjunctiva. Klin. Monatsbl. f. Augenheilk. Dec., 1913.

12. Casali: Ocular Pemphigus. Annali di Ottalmol. Vol. XL.

13. Chandler, H. B.: Pemphigus of Conjunctiva. Amer. Jour. Dermatol. Apr., 1912.

14. Corlett: Jour. Cut. Dis. Vol. XXVI.

15. Dahnhardt: Deutsche med. Wochenschr., 1887, No. XXXII.

16. Demme, Verhandl. d. Congr. f. inn. Med., Weisb., 1886.

17. Fehr: Pemphigus of Conjunctiva in Severe Syphilis. Oph. Rec. Vol. XXX.

18. Franke: Der Pemphigus und die essentielle Schrumpfung des Bindehautsackes. 1900.

19. Gelpke: Ueber Pemphigus Conjunctivae. Klin. Monatsbl. f. Augenheilk. 1885.

20. Groenouw: Beziehungen der Allgemeinleiden zu Veränderungen des Sehorgans. Graefe-Saemisch. XL. I.

21. Howe: Bullous Dermatitis Following Vaccination. Jour. Cut. Dis. Vol. XXI.

22. Le Roux: Ocular Pemphigus. Arch. d'Opht. Vol. XXXIII.

23. Malcolm: Morris & Leslie Roberts: Pemphigus der Haut und Mundschleimhaut. Verbunden mit essentieller Schrumpfung und Pemphigus der Bindehaut. Monatsbl. f. prakt. Dermat. VIII.

24. Matzumota: Pemphigus of Conjunctiva Involving the Mucous Membrane. Nippon Gank. Zasshi, Oct., 1913.

25. V. Michel: Pemphigus der Bindehaut. Zeitschr. f. Augenheilk. III.

26. Ogui and Iamai: Pemphigus Treated with Radium. Nippon Gank. Zasshi, Nov., 1913.

27. Parsons: Pathology of the Eye. Vol. 1. Part I.

28. Pergens: Pemphigus des auges. 1901.

29. Pernet and Bullock: Acute Pemphigus. Brit. Jour. Dermatology. Vol. VIII.

30. Pokrowsky: Pemphigus of Conjunctiva. Klin. Monatsbl. f. Augenheilk. Vol. LII.

31. Sachsalber: Pemphigus Conjunctivae. Klin. Monatsbl. f. Augenheilk. 1894.

32. Santos-Fernandez, J.: Pemphigus Affecting the Eyes. Arch. de Opht. Vol. XII.

33. Sattler: Präparate von Pemphigus Conjunctivae. Bericht über die XII. ophth. Ges. zu Heidelberg. 1879.

34. Uhthoff: Pemphigus der Bindehaut. Berl. Klin. Wochenschr. 1893. No. 11.

35. Von Marenholtz, F.: Ein Beitrag zur Aetiologie, Pathologie und Therapie des Pemphigus Conjunctivae. Zeit. f. Augenheilk. Vol. XXVIII, 1912.

36. Weidler, W. B.: Pemphigus of Conjunctiva. Sec. on Oph., A. M. A. Trans. 1912.

LATE INFECTION FOLLOWING CORNEA-SCLERAL TREPHINING.

BY
J. F. CROUCH, M. D.,
C. A. CLAPP, M. D.,
BALTIMORE, MD.

Although late infection following Major Elliot's operation for glaucoma is now a well recognized complication, it is only possible to determine its frequency by placing every case upon record. We therefore submit the following case history:

P. R. Age 25. The patient consulted us at the Baltimore Eye and Ear Hospital on January 27th, 1913, complaining of smokiness before left eye for one month, with some pain for the past week. Examination revealed some increase of tension, which seemed to increase during examination; nerve was cupped and myopic crescent was present.

$$V = \rbrace \begin{array}{l} \text{O. D.} -22. = 15/40 \\ \text{O. S.} -16. = 15/200 \end{array}$$

$$\text{Tension} = \rbrace \begin{array}{l} \text{O.D. } 15 \text{ mm. Hg.} \\ \text{O. S. } 40 \text{ mm. Hg.} \end{array}$$

Patient was put upon eserine but as the tension did not remain normal he was advised to enter the hospital, which he did on February 7th, and a sclero-corneal trephining with iridectomy was done upon the left eye under cocain. There was a moderate amount of reaction and on February 26th a note was made of a small opacity on the anterior surface of the lens, and also some blood pigment on posterior surface of the cornea. The field showed contraction, most marked in the lower nasal quadrant. There was a large filtration opening with conjunctival bleb over same. Patient left the hospital on February 25th with normal tension (finger). On March 24th tension in the left eye was 40 mm. Hg., and a tension of 50 mm. Hg. with dilated pupil was noted on April 14th Vision with —13 was 15/100. Tension became normal under eserine but optic atrophy continued so that the vision on September 26th was only 2/200 with very pronounced contraction of field.

Patient was not seen again until March 16, 1914, when he returned with an acute conjunctivitis in left eye for which a simple collyrium was ordered. Two days later the bleb over the trephine was found collapsed and a fibro-purulent exudate was present in the anterior chamber; tension increased. Patient was again ordered to the hospital and put to bed, with atropin gr. iv.—ʒ, bichloride 1-5000 and hot box. Tension gradually became less and exudate disappeared. Patient left the hospital on April 1, 1914, with clear anterior chamber but with numerous floating opacities in the vitreous.

The following points are of interest in this case. The time which had expired since the operation (13 months), showing that the infection must have penetrated the conjunctiva as no fistula would have remained that length of time. Secondly the youth of the patient (25 years old), and thirdly, the myopic condition with stretching. The recurrence of glaucoma is infrequent in either condition.

THE TREATMENT OF TRACHOMA.

BY

FRANK ALLPORT, M. D.

CHICAGO.

In discussing the vexed and unsettled question of trachoma, only its treatment will be mentioned. Its history, pathology, bacteriology, clinical picture, etc., are matters of frequent reference, and a recent article by Dr. L. Webster Fox in the July number of Ophthalmology brings the subject pointedly and fully up to date. The interesting question is, can trachoma be cured, and, if so, by what means? I believe that this disease *can* be cured in a large majority of cases, and that its effects, such as pannus, entropium, etc., can usually be removed or very greatly relieved. It will be well to assume certain facts before proceeding further.

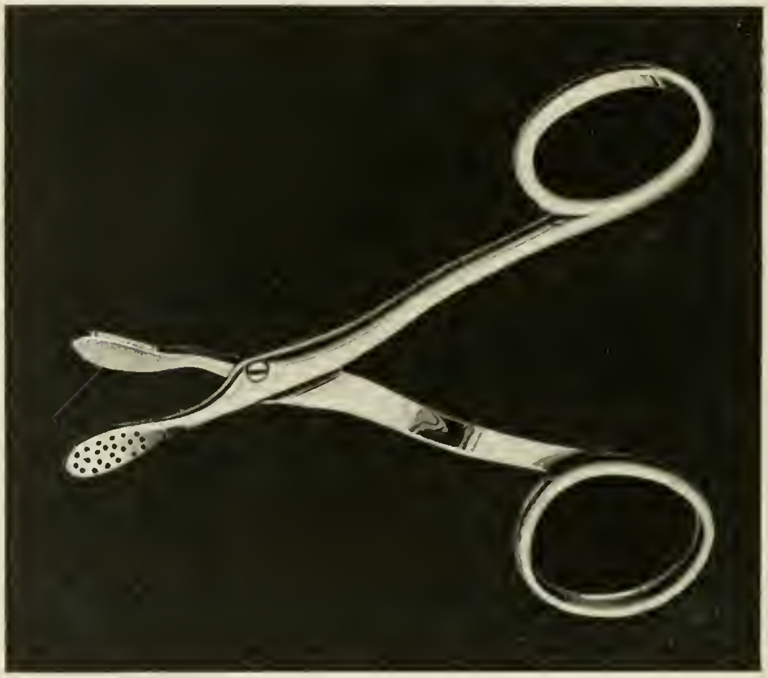
1st. Some cases are so severe and chronic, that the tarsus itself becomes so infected, that its removal is necessary.

2nd. Entropium, etc., is so pronounced in some cases as to render an operation for its relief imperative.

3rd. Pannus is sometimes so dense and persistent as to render special treatment or operation for its relief necessary.

Confining the discussion, therefore, to the treatment of trachoma proper, the question to be solved is, what is the best means of treating and curing this disease? The problem is, to remove the trachoma, and leave a healthy conjunctival lining to the lids. I think it may be assumed that the mere use of all drugs may be practically excluded as *curative* means. Those that are weak are not powerful enough to cure, and those that are strong are too radical in their effects on the conjunctiva to be safe therapeutic remedies; they destroy the conjunctiva, as well as the trachomatous deposits. The consideration of the subject therefore resolves itself into surgical measures of one kind or another, not forgetting that in X-rays and radium we possess remedies that may some day be more valuable than they have proven themselves in the past. The object to be attained is, as has been said, to *eliminate the trachoma without materially and permanently injuring the conjunctiva.* I have nothing really new to offer as a successful curative campaign, but as each man's personal experience, over a considerable period of time must be more or less valuable, I will relate what procedure has been, *to me,* the most satisfactory method of dealing with this disease. As a proof that there are few new things under the sun, I will narrate what Galen had to say about the treatment of trachoma, taken from a somewhat liberal translation of his work. It should be remembered that Galen was born in 131 A. D. and died in 210.

"In severe cases of *trachoma* physicians have, in their perplexity, thought out a singular remedy, namely, having everted the lids, to cleanse them thoroughly and then to scrape them off without the application of drugs. A few scrape only superficially with a small sharp spoon against the scalpel and afterwards wipe up with a soft sponge that which flows away, and then astringe the lids as far as any roughness remains. Others employ, also, the superficially rough skins of certain sea-animals in a manner entirely appropriate for this purpose. One of my teachers even prepared an eye-pencil of pumice-stone, and, having everted the lids, rubbed the roughness away from them with this instrument. As a matter of course, a person must pulverize the pumice-stone, and make it into a pencil with tragacanth or gum. When, under the employment of the pencil mentioned, the discharge begins to cease, then we may venture to rub into the lids purifying medicines; but, at first, we should employ only a weak solution."



Kuhnt's Trachoma Forceps.

The underlying principle of my method consists in the frequent expression of the lids with Kuhnt's forceps, a picture of which is here given.

The pain of the little operation is materially mitigated by cocaine. The forceps are used to *squeeze* the tissues and *not to strip them*. Knapp's, Noyes', Prince's and other forceps *strip* the tissues, and consequently tear and mutilate the conjunctiva, which is both unnecessary and undesirable. The vigorous scrubbing of the conjunctiva with gauze as used by Fox and others, and the scraping of the tissue with files, rasps, stiff tooth brushes of wire or bristle, etc., as recommended by various authors, frequently produce undesirable and dangerous traumatisms. The frequent *squeezing* of the lids with Kuhnt's forceps, however, will, in course of time, eliminate the trachomatous neoplasms, without inflicting injurious results upon the conjunctiva itself. These forceps are made with broad roundish ends, one blade being solid and the other blade being fenestrated. The pathological deposits are squeezed out through the fenestrae, as when considerable force is employed the bite of the forceps is very strong. In treating the upper lid, the lid should be everted, and one blade should be placed under the everted lid, and the other over the everted lid. In squeezing out the granules on the upper side of the everted lid the fenestrated blade should be uppermost, while if the granulations on the under side of the everted lid, and in the cul-de-sac, are to be expressed, the fenestrated blade should be under the everted lid. The lid should be squeezed throughout its extent. from the inner to the outer canthus, and throughout the entire extent of the cul-de-sac. This latter can be best accomplished by not everting the lid, but by passing the fenestrated blade up under the lid as far as possible, while the non-fenestrated lid is outside the lid on the skin. The two blades. then brought together firmly at the various points will *express* the granules from the cul-de-sac of the conjunctiva. I follow up this thorough squeezing process by lavishly powdering the everted lid with boracic acid, and then rather gently rubbing it into the tissues with a small soft child's tooth brush.

Allport's Trachoma Brush.

The powder is then washed off with water. Some hemorrhage is desirable, and will always follow, if the procedure has been thorough. If it proves necessary to brush the cul-de-sac, the lid may be rolled over with Darier's forceps, and the tooth brush and boracic acid brushing thoroughly applied. Ice cold applications a few times after the little operation will control the reaction which, however, is very slight. The operation should be followed for several days by soothing and antiseptic treatments, such as boracic acid irrigations, bi-chloride ointment, argyrol, etc. After the immediate effects of the operation have subsided, mildly stimulating treatment will expedite matters. For this purpose I sometimes use the old-fashioned copper stick after which the lids should be thoroughly washed off with water. I also use what is called "Brown Ointment," a description of which will be found in Wood's Ophthalmic Therapeutics, page 436. This is a dilute citrine ointment, made with cod liver oil instead of with lard oil. This is massaged into the eye and lids, and is very efficacious and not particularly irritating. In from one to two weeks the little operation with Kuhnt's forceps, the tooth brush and boracic acid, etc., may be repeated, to be again followed with some such treatment as has been indicated. These procedures should be repeated again and again until a cure has been effected, which will usually occur in about three months. The disease will by this time probably be removed and the conjunctiva will present an almost normal appearance. Structural changes such as pannus, entropium, incurved and badly infected tarsi, etc., must, of course, be cared for according to their several necessities. This article only refers to *trachoma, pure and simple.*

SPONTANEOUS REATTACHMENT OF THE RETINA AFTER TWENTY-TWO YEARS DURATION, REPORT OF THE CASE WITH REMARKS.

BY
A. EDWARD DAVIS, A. M., M. D.,
NEW YORK.

A considerable number of isolated cases of spontaneous reattachment of the retina have been reported, but in none can I find where reattachment has taken place after having remained detached for so long a time (22 years), as the case here reported.

The nearest approach to it in point of time, is a case by Frankel* of eleven years duration, which did not yield to treatment, but spontaneous cure took place at the end of this period.

F. B., age 18 years, first seen August 12, 1897, with history of a fall from a carriage when six years of age and striking

---

*Klin. Monatsbl. Mai. Cited by E. Thomson, *Ophthal.?* Bd., vol. 8, page 105.

the left side of his head. He did not notice that the sight was affected at the time. It was not for some weeks afterward that the vision became bad in the left eye, he being able to see only indistinctly downward and to the left. Patient has always been in delicate health, and is tall, thin and pale. History of tuberculosis in the family. No history of syphilis or rheumatism. R. V. = 20/15 w. plus 1 D. L. V. = fingers at two feet, down and out. Field limited, corresponding to the detachment. Ophthalmoscope shows normal fundus right and the eye hypermetropic, 1.50 D. In the left eye there is a detachment of the retina involving almost the entire lower half, extending from the nasal side along the horizontal meridian to the disc, and then from the optic disc towards the temple and slightly upward. The detached portion is flattest nearest the disc, and highest at the lower part of the fundus in the vertical median where the retinal vessels can be seen plainly with plus 9 D; down and nasally plus 6 D; down and temporally with plus 4 D. A narrow white band extending horizontally across the fundus, slightly inclined from down and in, up and out, demarcates the detached from the attached portion of the retina. The tension is slightly plus, pupillary reactions normal

The present case is of special interest it seems, because of two or three unusual features. The first and most important one is, the reattachment of a retina after it had remained detached for so many years (22). Second, that the reattachment was spontaneous, without any local treatment. Evidently the detachment in this case occurred when the patient was between six and seven years of age, when he noticed the very poor vision. This was eleven years before he came under my observation; and he remained under my immediate observation for eleven years until sent to the country, the detachment remaining about the same while under observation. This made a period of twenty-two years of detachment. The patient remained in the country for six years without the eyes being examined, improved much in health and gained many pounds in flesh.

On reexamining the eye after his six years in the country, the retina, to my great surprise, was found to be completely reattached, though the field was not restored. But, after a detachment of such long duration, restoration of the field was not to be expected. The field in fact was almost identical with that taken when the retina was detached. The narrow subretinal band of demarcation which had made the boundary between the attached and detached portion of the retina had become a little broader with a few pigment specks at the lower border of the band, while the band on the nasal side had spread out at the periphery into a wide patch of choroidal atrophy. Several other narrow white bands were to be seen beneath the reattached retina, especially on the temporal side and below, while down and in from the optic disc were two or three small, round, clearcut patches of choroidal atrophy. In addition, just below and to the temporal border of the optic disc and encroaching upon it, was a slightly elevated yellowish white exudate resembling in a marked degree a tubercle. The ophthalmoscope shows some dust-like opacities in the vitreous, and a hyperopic refraction 1 D. in all parts of the fundus, there being no difference of level over the reattached retina from that of the other portions of the retina. And it is interesting to note at this point that the patient before going to the country developed tuberculosis, the apex of the left lung being involved.

The tuberculin tests, both the von Pirquet and the subcutaneous injection of old tuberculin gave positive reactions, and the therapeutic injections of B. E. mixture gave reactions of a local and general character, but no focal reaction. Because of a tendency to cough and some irritation at the apices of the lungs, the B. E. treatment was discontinued. The country air, good food, and regular hours, being depended on for cure of the consumption, and we trust a permanent cure of the detachment, which has remained reattached now for seven months. A Wassermann test proved negative.

It is interesting to speculate how a spontaneous cure is brought about in these patients. In the present case I am of the opinion that a choroiditis of a tubercular nature developed subsequently to the traumatic detachment, and that with the improvement of the patient's health when in the country, the choroiditis subsided and in the healing process the retina was bound down to the choroid. The old patches of choroiditis and the white streaks under the retina all point to this method of cure. Casper, Leber, Praun, Imre and others consider the white subretinal streaks as the final stage in the cure of traumatic detachment. In my own case not only were these subretinal streaks present, but old patches of healed choroiditis, both factors, in my opinion, entering into the cure.

A case reported by Fano (1876) and cited by Ernest Thomson,* though of not so long duration as mine has several points of similarity to the one here reported:

"A soldier after a blow on the orbit, developed an inferior detachment. Five years later he returned to Fano, who found the detachment had entirely disappeared, leaving complete choroidal atrophy at its site. Iridic adhesions were also found at this time, and the author draws the conclusion that a severe irido-choroiditis had resulted in a destruction of the choroid and a soldering down of the retina to the choroid."

The general consensus of opinion respecting these cases is in accord with the statement of Weeks in his textbook, to-wit:

"Spontaneous recovery takes place only in a very small percentage of cases. This is most apt to occur in detachment following traumatism not associated with high myopia, detachment with albuminuria, detachment due to inflammatory choroidal exudate, to disturbed circulation and to diseases of the orbit, rarely in detachment accompanying myopia."**

Ernest Thomson, in a general review on "Detachment of the Retina," published in four installments in the Ophthalmoscope (London) in 1909 and 1910, gives a most excellent resumé of the whole subject, as to Pathology, Diagnosis, Treatment, and Prognosis, and a review of the literature up to that time with comments on the interesting cases.†

Under the heading of *"Spontaneous Cures,"* he states, "I am sufficiently skeptical, and at the same time forced by necessity to include cases where there may have been treatment of a simple nature, such as rest in bed, bandaging, atropin, and so on, but no active medical or surgical therapeusis. The study of spontaneous cures is of as much moment as that of cures following treatment, because the latter is so notoriously ineffective, and because there can be no doubt that many, many cases, reported as cures following more or less complicated treatment, would have become cured if left to themselves or treated by rest alone."

Thomson speaks of "Spontaneous cure," as meaning "spontaneous reattachment," with or without recovery of function. He remarks as to the contradictory statements of the early writers on the subject of spontaneous or of any cure, of detachment of the retina, which holds even to the present day writers—some reporting many cures, some none at all. He cites Hirschberg, who in 1879, had not seen a single spontaneous cure out of 113. detachments. This author later reported four or five cases of spontaneous cures.

---

*Ophthalmoscope, Vol. VIII, 1910, page 103.

**Diseases of the Eye, p. 486.

†He gives full references to the literature of the subject up to 1910, and I would refer the reader to this most excellent review.

"Abadie, in 1884, denied the permanence of reattachment and in 1900 stated that in thirty years practice he had never seen a single spontaneous cure. Lagrange, in 1899, stated he had not seen one single myopic detachment cured. Galezowski, in 1887, only admitted one spontaneous cure out of 784 cases of detachment."

In spite of the above pessimistic reports, Thomson, was able to cite the reports of many cases of spontaneous cure, even in myopic patients. For instance, in myopia:

Steffan, one case.
Galezowski, three cases.
Armaignac, one case.
Hirschberg, four cases.
Douberg, three cases.
Kopff, one case.
Chevallereau, one case.
Sulzer, one case.
Higgins, one case.
Horstmann, five cases.

These cases of Horstmann were kept under observation for years and there seems no doubt as to the permanency of cure.

As to the spontaneous cure of detachment in nephritis of pregnancy, Thomson states:

"It is impossible to avoid a feeling of certainty that cases of detachment occurring in albuminuria of pregnancy represent a morbid process differing in some essential way from that which exists in myopic and even traumatic non-myopic detachments. At any rate, one is not surprised at reattachment when the renal stress is lessened or removed on delivery."

The most favorable cases for a spontaneous cure are supposed to be those following trauma, and a number of such cases are cited by Thomson in his review.

It is interesting to note here also that Muglich,* in 1891 collected 136 cases of spontaneous cure of detachment from all causes.

Prognosis.—Although the prognosis is considered more favorable in traumatic cases by the vast majority of surgeons,

---

*Inaug. Dissert. Marburg, 1891.

Thomson, after his exhaustive review of the subject, states that he is not convinced that the evidence is conclusive for a better prognosis in traumatic than in myopic cases. And he states further that the statistics of spontaneous cure are of the most contradictory character. With which statement one must fully concur, after reading the different reports of the cases in the literature on the subject; also one is inclined to agree with him in another observation, to-wit:

"That the treatment of detachment is to a certain extent a game of chance."

In his general conclusion, Thomson, in making a comparison of cures obtained by operative methods, including subconjunctival injections, with the non-operative methods, found 10 per cent of cures were secured by operative methods, and 7.2 per cent by the "pacific" method. With his favorable showing by non-surgical methods he is of the opinion that we ought to leave the decision (as to the method of treatment) to the patient without too much pressing forward of an operation.

Unless trephining, the newest operation for detachment, should prove more decidedly successful in bringing about cures than previous operations, devised for this affection, I am inclined to favor the non-surgical treatment in these cases. However, the patient should, in a measure, after the two methods have been placed before him for consideration, be allowed to say which method of treatment should be followed.

EYE PROTECTION FOR GRINDERS AND MACHINISTS.

BY

H. W. DAVIE.

There are more risks of injuries to eyes in iron and steel plants than to any other single part of the body. The Pullman Company's accident charts show that 35 per cent of all injuries are eye injuries. Dust, flying particles, sparks and glare, unless guarded against by efficient eye protectors, offer constant and unavoidable danger to the men. This fact is being recognized by safety engineers, liability companies and industrial commissions in various states. Leading liability companies are requesting, and in some cases requiring, their assureds to provide adequate protection for the eyes of their men. State officers are beginning to realize their responsibility in this matter and are issuing safety booklets describing dangers of accidents and recommending suitable safeguards for their prevention. This is notably so in California, Illinois, Iowa, Kansas, Massachusetts, Minnesota, New Jersey, New York, Ohio, Pennsylvania, Washington and Wisconsin.

Many employers have sought to provide their men with eye protectors and have met with more or less prejudice on the part of the workmen. Many of the workmen believed that glasses would injure their eyes or that they could see better without them, and they have gone on squinting at their work, receiving more or less serious injuries to their eyes, and when actually supplied with eye protectors they have tucked them under their benches and gone on as before. A good deal of this is due to the often-met prejudice against anything new. Another cause is that the eye protectors are sometimes so uncomfortable and irritating as to render their constant use impossible. Those objections have been overcome, however, and improvements have been designed which yield perfect comfort as well as complete protection to the wearer. When improved eye protectors are demonstrated to the workmon and the great value of safety glasses is shown, they wear them gladly and constantly. A great deal of patient explanation is necessary to induce the men to try them, but once fairly tried they are fixtures. But it is not only the men who have to be shown the benefits of eye protection. Many foremen do not realize that the numberless minor accidents to men's eyes, causing not only the injured person to stop work to get grit, dust or other particles out of his eye, but a mate to help him, and perhaps one or two others to look on, may all be avoided by the provision of suitable safety goggles.

"Small particles are likely to become lodged in the cornea of a workman's eye. Close examination with a magnifying glass will usually show large numbers of minute scars, sometimes so numerous as to dull the cornea and affect the vision," says Dr. Mark D. Stevenson. In the grinding room there are countless injuries to men's eyes which are, in many cases, given little consideration at the time. With so much fine dust and grit flying about many particles imbed themselves in the cornea of the eye. When these particles are rather large they cause such immediate irritation that the grinder leaves his work and calls on the "shop doctor" or some fellow worker to get it out. This, of course, is a very dangerous procedure. The man's eye may become infected from the use of a dirty toothpick or handkerchief, or the implement used may scratch the surface of the cornea so as to injure it permanently. Sometimes these particles may seem to have been taken out and, as in the case of the fine particles and dust which do not cause immediate irritation, they imbed themselves in the cornea so as to ultimately dull the vision and seriously affect the man's efficiency.

This matter has, up to the last year or two, been given little consideration generally and few people have realized how vitally necessary is the protection of a grinder's eyes. Without eye protectors he must squint and thus reduce his efficiency. and if he gets emery grit or bits of hot metal in his eye he will lose from five to twenty minutes in getting them out, if it is a simple case, and if it is not, he may lose days and weeks and ultimately his sight.

With all of the fine dust flying about a grinding room where there are numbers of men working, protection at the side is just as important as protection at the front. "Since the particles cut off by wheels are comparatively small, a heavy type of goggle is unnecessary. Goggles should have side guards of wire or leather as particles coming from the side frequently enter the eye," said R. G. Williams, safety engineer of the Norton Company, before the National Machine Tool Builders' convention at Worcester. It is readily seen that when there are a number of grinders working in a row it is impossible to prevent the sparks from one grinding wheel flying into another grinder's eyes. After most exhaustive tests as to the best way of protecting grinders' eyes, it has been proved beyond doubt that side guards should be provided on the glasses.

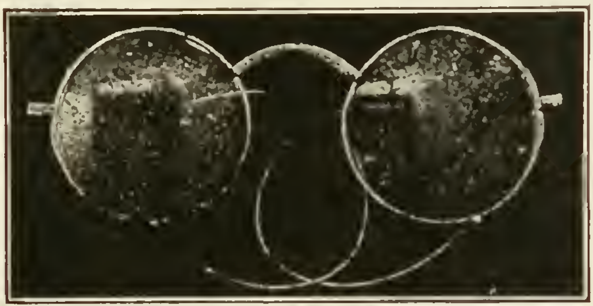


Fig. 1. Glasses after having been used two weeks by a grinder.

A man grinding high carbon or manganese steels looks constantly into a steady stream of sparks, the glare of which may cause retinal asthenopia. Retinal asthenopia is a condition from which the eye usually recovers after a suitable period of rest, but the loss of sight may be more lasting as the result of prolonged exposure to intense glare. In the industrial world retinal asthenopia is a dangerous condition, partly because of the insidious way in which it works.

A man grinding manganese or high-carbon steels should be protected from the harmful glare as well as from grit and dust. The desirability of light amber colored lenses for grinders' glasses has been proved in the research laboratories of one of the largest manufacturers of grinding wheels in the world. Grinders to whom glasses with white lenses have been given have complained of strain and irritation of the eye and blamed the glasses. The strain existed before, but was not noticed until something new brought it out. At once amber lenses were provided to cut out the harmful rays. There is an anti-sweat pencil on the market which will obviate sweating of the lenses. The effect of this pencil will last for from four to five hours.

Fig. 2. The dangerous glare of a stream of sparks has injured many a worker's eyes.

It is highly important that a heavy chippers' glass should not be given to grinders, machinists and others who do light work and who do not need such heavy protection. They will naturally object to the extra weight, and to get the maximum cooperation from workmen it is only wise to do away with all possible objections. Another thing which should be given careful attention is the matter of workmen who wear correction glasses. If these lenses are unprotected they quickly become scarred by emery grit and are soon so covered with spots that they are of little use. In the past it has been a frequent sight to see workmen wearing cheap leather goggles (such as are bought in 5 and 10 cent stores) over their regular glasses. Now, when the importance of good quality glasses is recognized by safety experts, eye protectors should be provided which can be worn over correction lenses even more easily than the old-style leather dust goggle. It seems unfair to burden a workman with placing high-priced correction lenses in his safety glasses and then having him pay for the many repairs which necessarily follow. In a good sanitary grinders' goggle which can be worn over other glasses and still provide protection from all angles, the workmen receive perfect protection and the cost of extra lenses for the eye protectors is small.

It is surprising to note the number of foundries in which no protection is given to the eyes of such workers as molders, pourers, grinders, men slagging the cupola, etc. The idea that these dangers were "risks of the trade" has been so strong that neither employers nor employes awoke to the fact that not only can much pain and impairment of sight be avoided, but the efficiency of the workmen can be increased and much time and money saved for the employers.

Under the new workmen's compensation laws, employers are required to furnish certain safeguards, but there is nothing to require the men to wear them. After showing the men the advantages of eye protectors, corporations should absolutely require them to wear the glasses for mutual benefit. In some cases the management purchases supplies of eye protectors for different needs and sells them to the men at cost, while other plants distribute them to the men free of charge, realizing that it is but a slight expense compared to the liability incurred if eye protectors are not worn. Since laws and insurance requirements force employers to furnish eye protectors where needed, it is but right that the employer should require his men to make actual use of them. This is an easy matter when they are shown the advantages.

SOME UNUSUAL FEATURES IN THE CASE OF A SENILE CATARACT EXTRACTION.*

BY

G. HERBERT BURNHAM, M. D., F. R. C. S. *Edin.; Prof. Ophthalmology, University of Toronto, Chief of the Eye Department, St. Michael's Hospital, Etc.*
TORONTO, CANADA.

This operation for the extraction of a cataract in the case of a woman aged eighty years, has some features, so unusual that it seems worthy of communication.

A preliminary iridectomy had been performed by me nine months previously, that is, January, 1914, and was quite normal in its course.

For the extraction of the cataract, I made in the usual way, a corneal incision with a conjunctival flap, using a Graefe knife and again everything was normal. My next step was, as it always is, to lift up the speculum with my left hand and the eyelids with it, so that no possible pressure can be made upon the eyeball, no matter how the patient may squeeze, and so hold it until the operation is quite completed.

As the opacity of the lens was of a fibrous nature and had matured very slowly, I used the pricker instead of the capsule forceps, as the capsule seemed, as it were, to be one with the lens substance. The moment I touched quite lightly the surface of the lens it was instantaneously dislocated downwards, so that the upper margin of the lens was across the middle of the pupil, in fact it appeared to drop down; and the vitreous flowed freely. Then quickly introducing the wire scoop the lens was removed entire in the capsule, and attached to its periphery throughout, as an apron, was apparently the whole of the suspensory ligament of the lens.

Before removing the speculum, I, as I always do, freely irrigated the eyeball with a one in twenty lotion of carbolic acid. The smarting is very short lived and the generally associated squeezing of the eyelids causes no harm, as I still hold the speculum in my left hand. Now removing the speculum I closed the eyelids with a pad, and upon this pad I placed a piece of ice one-third the size of a hand or larger, wrapped in one thickness of cheesecloth, so that the eye got the full chill of the ice. As it melted, a fresh piece was put on and the drip caught in a towel.

---

*Read before the Section on Ophthalmology and Oto-Laryngology at the meeting of the Ontario Medical Association, May 25th, 26th, 27th and 28th, 1915, held at Peterboro, Canada.

I may say that after every senile cataract extraction, I use ice and have found it very satisfactory. The feeling of coolness is very agreeable to the eye and also, there is no danger of the patient meddling with the eye on account of uneasiness. Also during the first twenty-four or forty-eight hours, the ice melts more rapidly than subsequently, though no inflammatory condition is present.

This action must lessen the tendency to any inflammation or if it occur should minimize its severity. It retards not in the slightest degree the healing process, on the contrary it seems to be an aid.

During this time, I dropped daily, between the eyelids, which were parted just enough to receive them, a few drops of a forty per cent solution of argyrol.

As the eye was quiet and the slight swelling of the eyelids had subsided, at the end of five days I examined the eye and found the wound well and firmly united. The iris forming the outer pillar of the coloboma was not to be seen as at the beginning of the operation.

Connected with the extreme outer corner of the wound was a thin brownish thread-like substance which played loosely upon the surface of the eyeball twisting upon itself. Three days later it had disappeared leaving in the wound a small dark and flat spot. The A. C. always remained normal. The thread-like body was the outer pillar of iris that had disappeared.

The diseased condition of the ciliary processes, so stealthy in character, of which there was no visible symptom prior to the operation, had so affected the suspensory ligament that it could not hold back the vitreous and had so weakened its attachment that it came away with the lens. Then further to accentuate this diseased condition the iris was torn away from its ciliary attachment, when the vitreous escaped so freely, and being so thin and friable, it was easily twisted upon itself and finally torn through, which I had not expected. Also being so atrophic, it offered not the same obstruction, as a healthy iris would have done, to the closing of the wound.

The eye healed very kindly with no after disturbance of any moment; Tn., vision with + 10. sph. $\overset{\frown}{\smile}$ + 3. cyl. axis oblique 6/12 and two letters of 6/9 and adding + 3 sph., reads quite easily.

This is a form of senile cataract in which the operator is prepared for complications to a greater extent than in the ordinary senile cataract. However, we are sometimes agreeably surprised to have no complications either during the operation or afterwards. Our inability confidently to diagnose is apparently due to the want of being able correctly to estimate the exact condition of the ciliary processes and also the state of the structures more immediately dependent upon them for nutrition. This inability is merely a confession that we have not as yet properly observed the disease; for all the necessary symptoms, undoubtedly, lie before our eyes could we but see them.

A CASE OF EPIBULBAR SARCOMA.*

BY
HOWARD F. HANSELL, M. D.,
PHILADELPHIA, PA.

Mrs. M. K., 46 years old, was admitted to the Jefferson Hospital, November 10, 1914, service of Dr. J. H. Gibbon. She complained of pain in both legs and after examination the provisional diagnosis of infectious thrombo-phlebitis was made. No family history of renal, cardiac, tubercular or malignant disease was obtainable. The patient has had three miscarriages, the last, twelve years ago. She had dullness over right apex and base, and examination of sputum showed a few streptococci, staphylococci and diplococci, but no tubercle bacilli. Physical examination revealed no conditions relevant to the ocular tumor.

I was asked to see the patient December 31st, 1914, because of the presence of a tumor, on the left eye. The tumor was round, flesh colored, covered by loosely connected conjunctiva, about the size of a marble, resistent to pressure but not particularly hard, and situated on the outer, upper quadrant of the sclera, about 8 mm. from the limbus. Vision was not affected and the only subjective symptom was that of annoyance from the presence of the tumor. The media were clear and the fundus healthy. Under local anesthesia it was removed entire. Its base was not only firmly attached to the sclera but was a part of it. The conjunctiva was sutured and a light pressure applied. Healing followed without complication. On May 29th, the day of her last visit, the site of the tumor was marked by a round, smooth area 3 mm. in diameter, rather dark but apparently not actually pigmented. There was no sign of recurrence. Vision 20/20. The eye appeared to be perfectly healthy.

---

*Read by title at the meeting of the American Ophthalmological Society, July 7, 1915.

Pathologic Report by Dr. E. D. Funk.

Specimen is a small semi-solid reddish-yellow mass measuring 0.5 by 0.2 cm.; weight 0.5 gm. The mass cuts easily and the incised surfaces are greyish-yellow and smooth.

The mass was fixed in absolute alcohol, embedded in paraffin, sectioned and sections stained with hematoxylin, eosin and Van Gieson's mixture.

Histology.—The sections are made up principally of a dense cellular collection supported by a scanty amount of fibrous stroma. Amongst the small round, deeply staining cells appear a number of young blood vessels and, in areas, extensive hemorrhage is present.

Diagnosis: Small, Round Cell Sarcoma.

The title of epibulbar tumor has been applied to all kinds of growths of the conjunctiva, corneal limbus and cornea. It does not signify the character but only the position of the tumor. The majority have proved to be sarcomata and like sarcomata in other parts of the body are prone to recurrence.

Verhoeff and Loring report in the Arch. of Oph., XXXII, 1903, 73 cases, comprising the published cases up to that year. L. W. Crigler, in the Archives of Ophthal., January, 1915, added a new case and abstracted twelve others from the more recent literature. These authors agree in their conclusions which may be summarized thus: The majority of cases occur in persons of advanced years; they are, as a rule, melanotic; their tendency is not to penetrate the globe, but to recur locally when removed and to produce metastasis. Koller's two cases (Arch. of Ophthal., July, 1912), are interesting as bearing upon the liability to recurrence. In a man of thirty-eight excision was followed by recurrence, local metastasis and contact tumors, yet after removal of the last of these there has been no recurrence for nearly eight years. The second case, a girl of seventeen, had a very small tumor which was removed; recurrence in two and one-half months. This was destroyed with the cautery and no recurrence in six years.

When the sarcoma is limited to the outer membranes of the eye, early and thorough excision with cauterization of the base (Koller) may be curative, but involvment of the intraocular tissues, recurrences, or rapid growth are indications for enucleation.

REPORTS OF SOCIETIES

CHICAGO OPHTHALMOLOGICAL SOCIETY.

RICHARD J. TIVNEN, M. D., PRESIDENT.

April 19, 1915.

(Continued.)

About two years previously he bumped his left eye against the corner of a chair. A concussion cataract formed, which was removed by another ophthalmic surgeon. Some thickened capsule remained. Three months afterwards there was much pain in the eye when the surgeon did a large, upward iridectomy, for the relief of glaucoma. Since then the vision had become steadily worse and the mother thought the eye-ball had grown larger. The patient had had attacks of pain in the left eye for some time, and the vision was reduced to perception of hand movements. As the tension remained plus 1, an Elliot trephining was done, under nitrous oxid gas and ether, on December 11, 1913. The operative wound healed nicely and the patient did fairly well until about three months ago when the pains and discomfort in the left eye returned and the tension again rose to plus 1. The patient's tonsils and some adenoids were then removed, without effect upon the ocular situation. A month ago, a scleral seton was introduced. The reaction was inconsiderable, and drainage had since been well established. Tension was now normal both under finger pressure and tonometric readings.

Dr. Wood reported a second case, and then described the procedure he had adopted in these two cases, as follows:

The eye is carefully rendered as aseptic as possible and the pupil is contracted by eserin. A narrow Graefe knife, with a hole near its point, is introduced and passed in precisely the same fashion as in the preliminary step of an anterior sclerotomy. The puncture and counter-puncture are made entirely in the sclera, but as near the clear corneal margin as possible, so that at least one-half the operative wound communicates with the anterior chamber. When the point of the instrument emerges from the globe at the counter-puncture one needle of a double armed white 00 braided silk suture, about eight inches long, is passed through the hole in the knife point. After a number of trials, it was found that a half curved needle is better adapted to the purpose than a straight one. It should be just large enough to pass easily through the eye of the knife, and should not be more than two-thirds of an inch long. Thus armed, the knife is withdrawn, so that about the same lengths of double sutures protrude from puncture and counter-puncture. The knife is now freed from the sutures with scissors, and the first needles are with a needle holder separately passed (by way of the counter-puncture wound) in different directions and for the length of the needle, beneath the ocular conjunctiva. The loose ends of suture corresponding to the puncture opening are then threaded and the same maneuver is practiced on that side. The so-called split or patent eye needle is most useful here, since a wet, sterilized suture can be immediately threaded upon it, otherwise valuable time is sure to be lost in vain attempts to pass damp threads through the eye of the ordinary needle.

It matters not what form of anesthesia be used, but it is well to employ a mixture of cocain and adrenalin locally to stanch the bleeding from the scleral wounds.

DISCUSSION. Dr. William A. Mann asked Dr. Wood if he put in a double thread. In most of the operations only one thread was used. Personally he thought a double thread was better. He would also like to ask as to the kind and size of the silk.

Dr. Wood, in reply, said that if one thread corresponding to two filtration area tracts be good, he thought four would be better than two. He really had that in mind when he thought of utilizing the double ends of the suture. Where we get four tracts or four canals he thought there was or might be some additional irritation. He did not believe, however, a double thread would irritate more than a single thread would.

As to the kind of thread used, he had employed different sizes in animals, but he used a braided silk thread—white. The size was 00. PAUL GUILFORD, Secretary.

WILLS HOSPITAL OPHTHALMIC SOCIETY.

P. N. K. SCHWENK, M. D., CHAIRMAN.

MARCH 2, 1915.

Dislocation of Lens.

Dr. Zentmayer exhibited a case of dislocation of the lens into the anterior chamber successfully treated after the method of Ewing. The patient was a man about thirty years of age. The lens had been dislocated for years. Symptoms of acute secondary glaucoma set in two days before the operation. The pain was so severe that it caused the patient to swoon and to vomit repeatedly. The lens, which was translucent, was entirely within the anterior chamber, except for a short arc of its equator which was behind the upper narrow iris circle. Under ether, a broad keratome was entered at the sclerocorneal margin at the lower-outer quadrant and the blade was pushed between the posterior surface of the nucleus and the posterior capsule of the lens. The keratome was then slowly withdrawn while pressure was made upon the cornea. The nucleus immediately slid along the blade and out through the wound. The cortical matter was then washed out and the capsule dragged out. No vitreous was lost. The patient made an immediate recovery.

Traumatic Cataract.

Dr. Zentmayer exhibited a case of traumatic cataract in a man about 30 years of age, in which he had extracted the lens after the method of simple extraction of the senile lens. An excellent visual and cosmetic result had been secured.

Etiology of Cataract.

Dr. S. D. Risley, in a symposium on cataract, said that the operation for the extraction of the opaque lens must be regarded as a capital operation in ophthalmic surgery. While the signal importance of a correct technic could not be overestimated, the choice of procedure and the technic must, in the final analysis, hinge largely upon the variety of the cataract and the operator's concept of the etiology of opacity of the lens. The day was long past when the ophthalmic surgeon regarded the opaque lens as a necessary concomitant of old age. While it was true that the majority of cataracts occurred in people after middle life, it should be remembered that it was nevertheless an exceptional occurrence; that the vast majority of even the very aged were spared this misfortune; that, therefore, some reason must be sought for its presence in these exceptional cases. The etiologic factors were on the one hand purely local and were to be found in the irritative and pathologic changes set up in the uveal tract, resulting from a lifelong strain upon the eyes in the struggle to overcome the errors of refraction and abnormalities of binocular balance, and was usually accompanied by the phenomena of asthenopia.

On the other hand, it should be borne in mind that the opacity of the lens, barring the soft cataracts of early life, occurred at an age when the organism was beginning to manifest the wear and tear of life in general impairment of function;

when the physician and surgeon anticipated the presence of cardio-vascular disease, faulty digestion, constipation, toxemias, infections, diseases of the joints, affections of the liver and kidneys, high blood pressure, and impaired glandular function. Reasoning, *a priori,* there was probably no organ of the body more prone to participation in these general disorders than the pigmented, highly vascular uveal tract of the eye, and the corrections of this reasoning found ample corroboration in the daily clinical experience of the ophthalmic surgeon. Since the nutrition of the eye is so largely dependent upon the vascular choroidal tract it was to be anticipated that the avascular structures in the eye, especially the lens and vitreous body, would be the first to suffer injury from any impairment of the nutrition of the globe due to uveal disease. In 186 cases of incipient and immature cataract studied with this in mind, 72% showed evidence of vitreous degeneration by the presence of infiltrates and webs floating in a more or less fluid vitreous and accompanied by ophthalmoscopic evidence of uveal disease, and in a large percentage a history of more or less prolonged asthenopia. The opacity of the lens was therefore to be regarded as sequel of uveal disorder and in its general management treated as such.

Complications During and After Cataract Extraction.

Dr. Zentmayer dealt with them in the order in which they might occur in the operation. He said that some of the complications were due either to the carelessness of the operator or to individual conditions local and general, and were often forecasted by these peculiarities. He considered too small a corneal section as one of the most serious of all complications. Loss of vitreous, while always to be avoided, was not serious if moderate in amount. He believed that efforts to improve matters by operative interference often led to a further loss, and he thought that it was frequently wise, after sweeping a spatula up under the lid, and after the speculum had been removed, to bandage the eye, without attempting a toilet of the wound. Delayed closure of the wound need give little concern, being best met by removing all dressings and applying narrow strips of isinglass plaster across the lids to hold them quiet. A protective mask should also be worn. If this fails to bring about closure, a careful search of the wound must be made for capsular and cortical shreds. A filtration of the aqueous will give rise to the appearance of a leaking wound.

Dr. Chance said that so clear an exposition of such chapters on "Cataract" as had been presented deserved the thanks of all present; and he for one wished to express his gratitude to his seniors for what they had said. The subject of cataract, he continued, is so vast that it is impossible to end any discussion, once it is started; neither is it possible to generalize on any division of the subject. Cataract is so intimate and personal, no two patients presenting exactly the same conditions. that no two surgeons could proceed and manage their patients in the same manner; and one may succeed where the other fails, although each has expended his best skill.

Dr. Chance wished to call special attention to the direction given by Dr. Fisher that when pressure has once been begun for the expulsion of the lens, it must be maintained evenly, persistently, and without the slightest relaxation, until the entire lens has been extruded. The speaker recalled the manner in which Maitland Ramsay conducted this point in his technic. In several extractions that Dr. Chance had seen the accomplished surgeon perform while visiting in Glasgow, a few years back, Ramsay had used a glass rod with a hook-shaped end curved somewhat, to conform exactly to the curve of the lens. When adjusted, it applied itself so evenly that by a sort of *"tour de maitre"* movement, the lens could be brought out entirely.

What Dr. Fisher had said in regard to the effect of allowing a thin sheet of posterior cortex to remain, Dr. Chance could very well second from his own experience during the past winter, and from the observation of several cases in the Wills Hospital. Dr. Zentmayer's reference to the use of unusual instruments designed to prevent serious consequences arising from complications, recalled to the speaker's mind the procedures of some of the distinguished surgeons no longer living. They had always gone prepared to meet any emergency, and the house surgeons were instructed to place a specified number of instruments on the tray. All of the teachers of most of the men now connected with the hospital had used relatively few instruments, seeming to be able to adapt one instrument to various purposes. Certain of them, especially Dr. Norris and Dr. Harlan, were timid in the use of the wire speculum. They preferred to expose the globe by simply holding the lids apart or, at most, to use a Desmarres lid-elevator, up to the point of expressing the lens. From that time on, the lids were held apart by the assistant's fingers. Dr. Chance then recalled how these and others of the surgeons would express the lens by simply pressing on the globe through the lids, for both direct and counter pressure. They so applied the lower lid as to bring out the loose cortical matter at the same time that the dense nucleus was expelled.

In reply to Dr. Risley's question as to which method gave the best results, the pure corneal incision or that with a conjunctival flap, Dr. Chance said that, judging by his observation of the results obtained by the former surgeons, he thought that here again the personal element entered too largely for him to specify the one or the other as being the best method. One surgeon could obtain uniformly brilliant results by means of incisions placed exactly within the corneal limit, while others invariably obtained good results with a corneal flap, although the after astigmatism was usually of a high degree. Dr. Chance considered the point to be aimed at to be the obtaining of a smooth surface, in a good plane, absolutely free from debris.

J. Milton Griscom,
Secretary.

TRANSACTIONS OF THE PHILADELHPIA POLYCLINIC OPHTHALMIC SOCIETY.

MARCH 11, 1915.

SYMPOSIUM ON GLAUCOMA.

"The Pathogenesis and Etiology of Glaucoma." Dr. Samuel D. Risley (by invitation).

Dr. Risley said that he knew of no chapter in Ophthalmology which had a wider literature than this and in which so little general advance had been made until within a few years and so far, he believed, much of the delay in a definite judgment and opinion with reference to this disease was due to the name, that is to say the term "glaucoma." It should be studied from the standpoint of the symptom complex and what it stands for, increased tension of the eyeball. For a number of years he has been very much interested in the study of the uveal tract of the eye, and as long ago as the time of the late Dr. Shakespeare when the talks they had on the subject of the investigations to be made along the lines of the choroidal tract led to the latter inventing the microscope.

Dr. Risley said that to him increased tension of the eyeball still constituted one of the most perplexing and discouraging chapters in ophthalmology. He said that he would like to dismiss the term glaucoma and study the significance of increased tension of the eyeball. After quoting from his article, "An inquiry regarding increased tension of the eyeball," which he read before the American Academy of Ophthalmology and Oto-Laryngology in 1913, Dr. Risley said that the great question was the etiological factor.

If we pass rapidly before our minds the considerable group of ocular conditions which either culminate in increased tension or threaten to do so, we will be impressed by certain significent facts. For example, if we consider the atypical forms of glaucoma (a) the buphthalmic eye of infancy and young childhood; (b) the cases of serous iritis; (c) chronic recurrent iritis of the plastic type, in each we find increased tension, seriously impaired acuity of vision, and when possible to determine it a contracted field, and in the laboratory cupped optic nerve, frequently the signs of an optic neuritis, chorioeyelitis, iritis, atrophied ciliary muscle, dilated ciliary vessels, a degenerated vitreous body and an opaque lens.

Another atypical group is constituted by (a) perforated cornea from corneal ulcer, or by perforating and infected wounds, leading to a partial corneal staphyloma, empty anterior chamber, iridocyclitis, increased tension and loss of vision. In the laboratory cupped optic nerve, inflamed and swollen, turgid or atrophic ciliary muscle, dilated ciliary vessels, degenerated vitreous and opalescent or opaque lens.

Approaching the usually regarded typical forms, that is to say, the so-called primary glaucoma, our minds at once revert to their usual grouping: (a) Glaucoma simplex or the so-called non-inflammatory type, regarding the nature of which there has been so much discussion; (b) the subacute inflammatory type, beginning with the transient impairment of vision, recurring attacks, increasing in severity and with briefer intervals between the exacerbations, the inflammatory features and pain meanwhile growing more pronounced, the anterior chamber shallow, the cornea steamy, the iris atrophic; the impairment of vision, the contraction of the field and increased tension, at first transient but becoming permanent. The anterior perforating vessels (long anterior ciliary) become permanently engorged; and from the first the transient attacks are associated with impaired range of accommodation. If neglected total blindness ensues and the disease passes into a stage of absolute glaucoma. In the laboratory is found a deeply cupped disc, atrophic optic nerve, atrophic ciliary muscle with evidence of preceding inflammation, dilated ciliary vessels, degenerated vitreous body, opaque lens; invariably both eyes in near sequence are involved; (c) the acute inflammatory type more violent from the onset, the final result as set forth in the former group rapidly consummated and the same laboratory findings in more exaggerated form; (d) the so-called hemorrhagic glaucoma, constituting one of the most striking and hopeless forms of the disease with which the ophthalmic surgeon meets.

He has in this summary eight well defined groups, characterized by increased tension of the ball and its disastrous sequelae and by certain pathological findings in the laboratory more or less common to them all. What relation if any do they sustain to each other? Is there some etiologic factor, more or less common to them all, to which the increased tension is secondary?

In discussing these inquiries there are certain general considerations that cannot be evaded. If we take, for example, the buphthalmic child with its destructive uveal disease, beginning before birth or during infancy or early childhood, we find it is obviously dependent on or constitutes a part of some general, usually hereditary disease. He has published a striking example of the latter under the caption of prenatal iritis in a syphilitic child, in which the buphthalmos occurred and the child passed into imbecility, the victim of syphilitic endarteritis.

In conclusion Dr. Risley said that treatment of glaucoma or increased tension of the eyeball must be addressed to the etiological factor, which if done early holds out hopes of recovery.

Myotics in Glaucoma.

Dr. Posey spoke on the use of myotics in the treatment of chronic glaucoma. He cautioned, however, that this form of treatment was applicable only to cases in which there were no inflammatory symptoms, as the presence of these latter demand some form of immediate operation. Myotics, to be effective, must be employed persistently and continuously four times a day. Their effects pass off at the end of three hours, and if the maximum amount of contraction of the pupil is to be maintained, the reinstillation must be faithfully carried out.

In beginning cases the dose of the myotic should be weak, to avoid creating spasm of the iris or ciliary muscle, the strength being increased from time to time as the drug loses its effect upon the pupil. Dr. Posey said he employed the nitrate of pilocarpine at 8 a. m., 1 and 6 p. m., but ordered the salicylate of eserine for the last instillation at night, on account of the more lasting effect of the latter drug. To obviate the irritation set up sometimes by the myotics, he spoke of the necessity of flushing out the conjunctival cul-de-sac some ten or fifteen minutes before the myotics were employed, with boracic acid solution. All myotic solutions should be compiled fresh once a month and should be perfectly sterile. Care should be taken to keep the dropper sterile. Attention should be given to the general health, tobacco prohibited and strychnine and alteratives prescribed for their effect on the optic nerve. He quoted figures deduced by him which showed far greater success from the treatment by myotics than from operation. He thought the treatment applicable to all stages of chronic glaucoma. He advised operation, however, on all hospital cases, on account of the difficulty of keeping this class of cases under continuous observation.

DISCUSSION: In closing Dr. Posey said that while the persistent, continuous use of myotics is a nuisance, nevertheless they never did any harm, whereas even the most skilfully performed iridectomies frequently interfered with vision by the creation of opacities in the lenses in consequence of hemorrhage from the iris at the time of the iridectomy.

TRANSACTIONS OF THE PHILADELPHIA POLYCLINIC OPHTHALMIC SOCIETY.

April 8, 1915.

"Ocular Palsies in Tabes"—Dr. Posey.

Dr. Posey spoke of the transient tendencies of these palsies, stating that it is an almost constant experience that the palsies that appear in the early stages of the disease vanish after periods of persistency ranging from but a few hours to two or three weeks, and, moreover, while it is true that the palsies that occur in the later stages are as a rule permanent, even these may be transient and may totally disappear, usually after a longer period, however, than when they are observed at the commencement of the disease. Thomas, who analyzed 111 cases of tabes from the Hopkins clinics in 1899, found the initial symptoms to consist of diplopia in 6 instances, and of other symptoms in 14 instances. Diminution of vision was the initial symptom in 4 cases. Double vision and dimness of vision were associated once and double vision with other symptoms 7 times. Ptosis was the first symptom associated with pain twice.

Dr. Posey found that the palsies vanished for a time at least in perhaps 90% of the cases which he had under observation. This percentage was based on an analysis of the history of 60 cases taken from his own records and from the study of 28 cases of advanced tabes which he had at one time made in the wards of the Philadelphia General Hospital.

The tendency of the palsies to recur was also dwelt upon, either the same muscles being repeatedly palsied or the paralysis appearing in another muscle or muscles shortly after it had disappeared in one governed by the same nerve. In some cases the palsy may pass away in a few hours; in others it may persist for years. This return of the muscle to its normal after even years of paralysis should be recognized by ophthalmic surgeons and should tend to discontinue operations on the eye muscles of tabetics. Tabetic palsies are usually dissociated. This is essentially true when the palsy appears as an initial symptom.

Of a large number of cases studied by Uhthoff, it was found that the oculo-motor was involved in 54%, the abducens in 33% and the trochlearis in 8% of the cases. From an analysis of 60 cases Dr. Posey observed, he found that the oculomotor was at fault in 30 of the cases, the abducens in 6 and the trochlearis in 2. Paralysis of the eye muscles occurs in about 20% of all cases of tabes.

Dr. Posey stated that it has been his experience that inequalities in the size of the pupil and disturbances in its reaction are found in the early stages of cerebral syphilis, often associated with optic neuritis, while palsies of the extraocular muscles, as a rule, belong to the later stages. When syphilitic palsies do occur in the early stages, they develop more gradually and persist longer, tabetic palsies, as has been said, manifesting a tendency toward speedy disappearance and frequent recurrence. Conjugate deviations and ophthalmoplegia externa are caused almost exclusively by syphilis.

According to Gowers, the initial symptom of tabes rarely appears within the first three years after the chancre; indeed, in one of his cases it was not noticed until forty years afterward. Spiller thinks that usually about nine years elapse after the initial lesion before syphilitic palsies of the eye muscles appear. From a pathological study of 11 cases diagnosed clinically as tabes, Spiller found considerable lymphocytic infiltration of the pia, with thickening of the pial vessels.

"Nervous Symptoms"—Dr. John H. Rhein (by invitation).

Dr. Rhein called attention to the fact that the early syphilitic manifestations, especially the skin lesions in cases in which tabes developed later were never very pronounced and in some of the cases there was no history of syphilis obtainable whatever. The recent studies of the Wassermann test make it probable that all cases of tabes dorsalis are luetic.

Noguchi found the spirochaete pallida in one case of 12 cases of tabes studied. His findings have given rise to the belief that tabes and paresis are actually syphilitic manifestations rather than parasyphilitic. Dr. Rhein was not inclined to accept this view as the response to treatment and the absence of characteristic pathological findings of syphilis in cases of tabes is against this.

Dr. Rhein referred to his pathological study of 16 cases of tabes in which he found round celled infiltration of the meninges in all cases, but which was not typical of syphilis except in five cases. He was inclined to the view that there was in all cases of tabes, however, besides the parasyphilitic lesion, more or less a syphilitic process. Therefore, in these cases an anti-syphilitic treatment is indicated. He called attention to the fact that there was a lymphocytosis in the cerebrospinal fluid; 10 to 20 cells in the c.mm. indicating weakly positive reaction, 20 to 60 cells in the c.mm. a positive reaction and over 60 cells in the c.mm. strongly positive. Globulin is increased and the colloidal test of Lange is positive in 80 to 90% of the cases.

The symptoms of tabes are sensory and trophic mainly, motor disturbances being late except in the case of the ocular nerve when they may be among the first symptoms. A possibility of a round cell infiltration as a cause of ocular symptoms was mentioned.

The intra-spinal injection of salvarsanized serum was recommended in the case of tabes even when there is optic atrophy. For the crises, section of the posterior roots from the seventh to the tenth dorsal nerves have been recommended. Also a tearing out of the fifth, sixth, seventh, eighth and ninth intercostal nerves, a procedure recommended by Franke.

The importance of rest, electricity, hydrotherapeutics and Frankel's exercises was emphasized.

"The Optic Nerve in Tabes"—Dr. William Zentmayer.

The only pathological condition of the optic nerve occurring as an integral part of the tabetic process is atrophy. Optic neuritis and diseases of the chiasm manifest as a hemianopsia may be associated conditions but occur as the result of a common etiologic factor, namely, syphilis.

The type of the atrophy is primary but according to Fuchs the nervehead often looks as though the atrophy was a secondary one.

The frequency with which optic atrophy occurs in tabes is about 10%. As Dr. Rhein has pointed out it may occur in the preataxic stage or later after the case is well advanced.

The subjective symptoms are a failure of central vision and color perception. When this is determined objectively it is seen that fields of vision for red and green are very much contracted and that this is soon followed by a similar contraction for yellow and blue. Long after color perception has failed the limits of the field for form may yet be of fair size. Later, however, this also contracts and total blindness ensues. The occurrence of a central scotoma is said by Uhthoff to occur in about 2% of the cases, but Fuchs' experience has led him to believe that it is of greater frequency. According to Fuchs the scotoma begins as a perfectly central one for color. Later there is extension toward the temporal region and finally the scotoma merges with the blind spot which itself has increased in dimensions. Careful search after the technique of Bjerrum will disclose small absolute areas within the relative area and also a zone of absolute scotoma about the central one. Indentation of the peripheral form field occurs and this increases until it meets the central blind area.

The course of optic atrophy is two to four years. A question that has been much discussed is as to the effect of the atrophy on the prognosis of the spinal cord trouble. It is believed that when the atrophy is an early symptom the prognosis of the tabes is better, at any rate that the ataxia is delayed.

There is a difference of opinion as to the tissues first involved in the visual tract. Some consider that the degeneration begins in the ganglion cells of the retina while others consider that the papillo-macular bundle is first involved. The changes found in the optic nerve are degeneration of the medullary sheath, breaking down of the axis cylinder. The fibres become varicosed and show droplets of myelin and fat. Interstitial changes are noted but are considered to be secondary.

Dr. Zentmayer said that what he supposed to be on empiric grounds alone it has been considered somewhat hazardous to use mercury in this form of optic nerve degeneration. It is important to remember Uhthoff's dictum that without syphilis there can be no progressive optic nerve atrophy.

"Intraocular Muscles in Tabes Dorsalis"—Dr. Luther C. Peter.

Early evidence of intraocular involvement are, first, irregularity in the pupillary outline, and second, inequality of the pupils or anisocoria. Both of these phenomena may mark the beginning of the Argyll-Robertson pupil. Posterior synechia should be carefully excluded. Inequality of the pupil is present in a large number of cases, but the difference between the pupils is slight. The unequal pupil may be dilated or contracted; dilated in diseases of the cilio-spinal centers and sympathetic, in paresis of the sphincter of the iris, and in a break in the centripetal reflex path. Accidental mydriasis, ruptured sphincter and glaucoma should be carefully excluded. The pupil is contracted in the presence of paralysis of the sympathetic. Inflammation of the iris and an accidental myotic should be excluded.

Later signs of intraocular involvement are myosis and the Argyll-Robertson pupil. Myosis is due to the disturbance of the cilio-spinal centers of disease of the superior cervical sympathetic ganglion. Spinal myotic pupil may react to light and accommodation. The myotonic pupillary reaction occurs in spinal myosis, it is a rigidity of the sphincter of the iris after light is thrown upon it and is probably due to disease of the iris tissue. Instead of myosis, mydriasis is a rather rare symptom of tabes. The Argyll-Robertson pupil is rather constant. occurring in about 80% of the cases. The lesion in the Argyll-Robertson pupil is probably in the afferent tract shortly after the fibres leave the sphincter nucleus. The exact location is in doubt. Sluggish reaction to light is quite as suggestive of the Argyll-Robertson pupil as complete loss of light. Great care should be observed in the determining of the pupillary reflexes so as to avoid sensory and psychical stimuli.

The reversed Argyll-Robertson pupil is a rare phenomenon and difficult to explain. The loss of accommodation and convergence reflex occurs late in the disease and usually is associated with complete internal ophthalmoplegia. The paradoxical pupillary reaction to light or convergence dilatation for the near point is rare.

The irregularity and inequality of the pupil are early phenomena and of diagnostic value. Myosis and the Argyll-Robertson pupil are late. In themselves these reflexes are not pathognomonic of tabes, as they occur in paresis and syphilis of the nervous system, and in other conditions. When associated, however, with other symptoms, they are of great differential value.

WILLS HOSPITAL OPHTHALMIC SOCIETY.

McCLUNEY RADCLIFFE, M. D., *Chairman.*

April 12, 1915.

"The Preliminary Preparation for Cataract Extraction."

Dr. Paul J. Pontius considered the subject under five separate headings, as follows:

1. The patient's general condition.
2. The eye itself.
3. Preparation of the patient and the eye.
4. Preparation of the instruments.
5. Preparation of the operator and his assistants.

(1) *The patient's general condition.* After the surgeon's decision to operate, the patient often needs a more detailed examination. Therefore, we should first satisfy ourselves that the general physical condition is one favorable to operation. General catarrhal conditions of the nose, throat and ears are well-known disposing factors to infection, and require active treatment. Acute or chronic ulcers on the body and limbs are also dangerous. A few months ago, about three days after a cataract extraction on a Polish woman, in the writer's service, a very active ocular infection developed. It was discovered, through an interpreter, that the patient had a small chronic leg-ulcer, which she had scratched with her finger, and had then slipped the same finger under the eye-bandage and touched the lid, which, she said, felt "itchy." Hence, the infection. Bronchial inflammation, either acute or chronic, as well as asthmatic attacks, should receive appropriate treatment before any operative procedure, as their presence may result in serious

complications. Cardiac lesions are also of vital importance, and may prevent the patient from resting in a recumbent position. About a year ago, such a case was admitted to the Wills Hospital. When the patient was put to bed and prepared for operation, it was found that he could rest only on the right side; and it became necessary to operate on him in this position. Gastro-intestinal conditions should be carefully studied, since in this class of cases inflammations, ulcerations, or malignant conditions may exist, which would possibly cause much annoyance both during and after the operation. Autointoxication and chronic diarrhoea may play an important role during the convalescence of the patient following operation. Diabetes is not always a cause sufficient to make one decline operative interference. Post-operative recovery, when this disease is present, is usually uninterrupted. Nevertheless, the ophthalmologist should endeavor to reduce the percentage of sugar, which may be temporarily increased by the mental strain incident to the operation. Careful study of the urine should be made for albumin, casts, sugar, indican, etc. Bladder complications, especially prostatic enlargement, may prove very serious. The writer has a very distinct recollection of such a case during his interneship in the hospital, for there were many night-calls for catheterization. Lues must not be overlooked, because the condition may be more active than the ophthalmologist suspects. While not considered of much importance, tuberculosis may be often overlooked, unless a careful physical examination is made. Anemia often interferes with rapid recovery, so that it is important to make a careful study of the blood and blood-pressure. A high blood-pressure accompanied with arteriosclerosis is a signal to watch for intraocular hemorrhage.

(2) *The Eye Itself.* A careful examination of the lids may reveal blepharitis marginalis, ulceration, or even the beginning of malignant disease. Catarrhal discharges from the conjunctiva or the lachrymal duct and dry and encrusted lids need careful study and treatment. Should the conjunctiva show any inflammatory condition, smears should be made from the secretions found in the cul-de-sac and puncta, and appropriate treatment should be instituted. Indeed, it is wise at all times to make such bacteriological study, irrespective of the pathological condition of the conjunctiva.

It is important to study carefully the tension of the eyeball with the tonometer, to determine the intraocular pressure.

If it is high or if the operator is in doubt, the patient should receive appropriate treatment until the operator feels it is safe to go on with the operation. Many years ago, there was a patient in the Wills Hospital in whom, after making a corneal incision for a cataract extraction, it was necessary to bandage the eye and administer ether before finishing the operation, because the patient was suffering so much pain. When he had recovered from the ether, he admitted having been struck in the eye with a hair brush four weeks previously, and said that since that time he had been seeing colors around lights. A cataract rapidly matured, and though the eye showed no external irritation, the patient confessed that it was tender to the touch. He stated that he had been advised to say nothing about the accident because no surgeon would operate upon a tender eye. This case affords an illustration of an undetected glaucoma associated with cataract.

(3) *Preparation of the Patient and the Eye.* A purge is ordered after the patient's admission. It is usually calomel, followed by a saline, and is given the day before the operation. The eyes are bathed twice daily with sterile boric solution until the day of operation. The preparatory toilet consists of a tub bath and shampoo. Two hours previous to the time of the operation, the face is washed with liquid soap and sterile water, followed by alcohol, particular attention being given to the region of the lids and brows. The conjunctival sacs are washed with bichloride solution, 1-10,000, followed by boric solution. Moist pads are applied over the eyes, both of which remain bandaged until the giving of the anesthetic is begun. In some cases, the cilia are trimmed, according to the preference of the operator. After the operation, the patient is returned to bed, where he remains during convalescence.

Patients to be operated upon during the afternoon require no dinner. When the operator is ready, the patient's bed is wheeled into the operating-room, and the administration of the anesthetic is begun. The anesthetic is local in all but exceptional cases. Freshly made four per cent solution of cocaine hydrochloride and adrenalin-solution, 1-1,000, is the anesthetic most frequently employed, although some prefer holocaine and adrenalin. The location of the bed and the proper position of the patient having been determined, the bandage is removed and the giving of the anesthetic is begun. To secure anesthesia, a drop of cocaine with a drop of adrenalin is instilled into each eye, after which, at intervals of two minutes, three more instillations of cocaine alone are made in the eye to be operated upon. The patient is directed to close the eyes between the instillations. The anesthetic is presumed to be suitable for the section two minutes after the last instillation, or ten minutes after the first instillation.

The conjunctival sac now receives its final cleansing, being irrigated with boric acid solution, after which the face and head are covered with a large sterile sheet, with an opening only sufficiently large to expose the field of operation. The conjunctival sac is cleansed by wiping with cotton applications of boric solution, and then flushed with boric wash.

(4) *Preparation of the Instruments.* All the instruments are scrubbed and, with the exception of cutting instruments, placed in the sterilizer. After proper sterilization, they are removed, wiped with alcohol, placed on a sterile tray, and covered with sterile towels. Cutting instruments are not boiled, but are placed on a sterile tray and covered with absolute grain alcohol for fifteen minutes before the operation. They are then dried with sterile cotton and placed on the sterile tray with the other instruments.

All solutions are sterilized before operation and placed on the tray beneath sterile towels.

(5) *Preparation of the Operator and his Assistants.* Surgeon and his assistants scrub their hands and arms with liquid soap and hot water, put on long operating gloves, then wash their hands and arms in alcohol and acetic acid, finally in bichloride solution. The head and face are covered with a sterile mask, exposing the eyes; so that the mouth and nose are prevented from carrying infection to the field of operation.

DISCUSSION.

Dr. Posey spoke of the necessity of examining the mouths of patients for pyorrhea alveolaris—this affection, in the experience of others, having frequently been responsible for infection after cataract operation. He further stated that he made use of White's bichloride salve, both before and after the operation. He thought that the presence of sugar and albumin in the urine should always render the prognosis more doubtful. He had seen diabetic pneumonia cause death in one instance after a cataract operation. In his opinion, patients are frequently confined to bed too long after the operation, and advised more freedom of movement and a more liberal diet for aged and infirm. Failure of reformation of the anterior chamber, he thought to be best prevented by a conjunctival flap, and strongly advocated this form of incision in all operations. Cocaine, he employs as analgesic, never having seen any untoward effects from its use.

Dr. Risley said that the methods set forth by Dr. Pontius for the study and preparation of the patient for the extraction of cataract were, in nearly all respects, the same as he employed. His own method of producing local anesthesia, however, was different. The repeated instillation of cocaine for ten minutes or longer, he believed not to be necessary, it having also the disadvantage of lowering the tension of the ball and apparently preventing the rapid normal secretion of aqueous. The relaxed, softened ball, he said, makes a typical section more difficult; while after its completion, the blood and other fluids are drawn into the globe, making the subsequent steps of the operation, including the delivery of the lens, more difficult, and possibly increasing the danger of infection from the conjunctival sac.

His own method is to employ a four per cent solution of cocaine twice, to be followed by a solution of the adrenalin chloride, the procedure not requiring more than five minutes, at the most. Then, with the speculum in situ, he lifts the lids from the ball and flushes the conjunctival sac with boracic acid or physiologic salt solution. With this method, the ball retains its normal tension, or resiliency; the secretion of the aqueous from the ciliary body is undisturbed, and tends to keep the anterior chamber drained, even of blood, after the iridectomy is made, leaving a clear field for the capsulotomy.

Dr. Risley was pleased to hear the essayist urge the importance of a systematic study of general systemic states and the removal of untoward conditions, as a part of the preparation for the operation. Since the prognosis depends in large measure upon the presence or absence of pathologic conditions of the uvea, he said, this preliminary procedure can not be too strongly emphasized.

Dr. Risley also said that he wished to emphasize Dr. Posey's view regarding the importance of getting aged persons out of bed as soon as possible after the extraction. They usually dread going to bed; and if allowed to remain there too long, they grow weak and it becomes difficult to get them around again.

Returning to the subject of the preparation of the eye, he quoted the opinion of Dr. A. B. Randall that solutions of bichloride of mercury should not be used in conjunction with cocaine anesthesia, believing that the disturbance of the corneal epithelium is due to the influence of the bichloride solution on the anesthetized cornea.

In regard to the matter of subsequent treatment, Dr. Risley said that his experience did not permit him to adopt the open method. While he considered rudely applied bandages and dressings to be deprecated, he felt that safety is on the side of careful protection by a properly adjusted bandage until the wound is firmly and smoothly closed. Without the support afforded by such a bandage, even when a conjunctival flap is the deliberate choice of the operator, as in his own case, there is often seen a bulging of the wound or drawing apart of the anterior lip of the section. This is not, he said, an actual opening of the anterior chamber, but a stretching of the newly formed cicatrix, which increases the corneal astigmatism. He was quite aware that a too firm bandage over an uneven wad of cotton might theoretically cause a gaping of the wound, but thought that this is not true of the protecting bandage that he had in mind.

Dr. Zentmayer said that his preparation technique did not differ greatly from that followed by Dr. Pontius and Dr. Posey. A dressing of bichloride of mercury ointment, 1-3000, is used by him, and is applied the night before the operation. Several times on the day before the operation and on the morning of the day of operation, which is performed in the afternoon, the nose is sprayed with a solution of permanganate of potassium, 1-3000. The eyelashes are cut off at their curve. This Dr. Zentmayer considers a necessary precaution, as it prevents the solution from being contaminated by being dropped through the lashes as the patient winks. Again, if the lashes are left long, the cystitome may come in contact with them. After the method of Smith, the final flushing is made with the speculum inserted, but lifted away from the globe. In this way the entire conjunctival sac is reached.

If the wound is not closed by the end of the fifth day, all bandages are removed and isinglass strips and dark glasses are substituted. This will often bring about union. In connection with Dr. Posey's statement as to the necessity of reducing the sugar in the urine of diabetics before operating, Dr. Zentmayer thought it interesting to see, in the issue of the Journal of the American Medical Association for April 3d, that Addis claims that this is harmful and liable to cause coma.

J. Milton Griscom, M. D.,
Secretary.

COLORADO OPHTHALMOLOGICAL SOCIETY.

SPECIAL MEETING.

Pueblo, Colorado, May 22, 1915.
J. J. Pattee, M. D., Presiding.

Dr. F. E. Wallace, Pueblo, presented six patients as follows:

Perimacular Spots.

Miss G. T., age 23. About June 25, 1914, noticed vision of right eye was impaired. O. D. V. 20/200. Central scotoma for form and color. Around macula can be seen a few small, faint, dark, granular spots. Complains of eye aching after close work and has been subject to severe headaches for the past four years. Neurotic temperament. Examination two years ago revealed tubercular process in right lung. Von Pirquet and Moro tests positive. Recent tuberculin test negative. Wassermann seven months ago positive—probably inherited. Some improvement has been made in vision. I regard the macular changes as tubercular rather than specific.

DISCUSSION. Dr. Edward Jackson, Denver, thought the process tubercular.

Dr. D. H. Coover, Denver, has a similar case in girl of 22 whose vision was 5/60. There is a distinct exudate in the macula with pigmented ring. Physical examination negative. No improvement under tonic treatment, but it was marked under tuberculin with which she has been treated six months and the vision is now 5/15. Dr. Coover believed the case shown by Dr. Wallace to be tubercular.

Retinal and Choroidal Changes.

Mr. C. T. two years ago first noticed impaired vision of the left eye and diplopia. At the time of examination, November 14, 1915, R. V. 20/20, L. V., direct, discerns hand movements, while from the side fingers can be counted at 2 feet. Divergent squint. Media hazy. Peripheral vessels indistinct, some being obliterated. Black spots and whitish areas can be seen. Proliferation of the vessels throughout the fundus and running from above downward, a broad, crooked, ragged edged, whitish scar.

DISCUSSION. Dr. E. R. Neeper, Colorado Springs, thought that it might possibly be due to some obstructive lesion in the nose, or perhaps, the result of trauma.

Dr. Edward Jackson thought it not unlikely that it was congenital as there was the appearance of what might be termed a connective tissue mass.

Dr. D. H. Coover said that it might have occurred from hemorrhage, the result of a blow.

Dr. J. A. Patterson, Colorado Springs, said that it had occurred to him that the condition could be the result of hemorrhage.

Dr. Wallace stated that there was no history of injury.

Simple Glaucoma.

Mr. F. P., age 52. R. E. V. 20/20. Vision of left eye began to deteriorate two years ago; no pain, soreness or headache. Can now see movements of hand. Slightly increased tension with shallow anterior chamber. Pupil does not react to light but does consensually. Disc white, cupped, ring of pallor around it. Pulsating arteries with silver wire effect. Choroidal vessels can be seen.

The doctor wished to know what was best to do in the case.

DISCUSSION. Dr. A. C. H. Friedman, Colorado Springs, thought it a case for operation.

Dr. Edward Jackson believed that a trephining might possibly prove of benefit.

Dr. D. H. Coover concurred with the former speakers and incidentally remarked that Knapp did not trephine inflammatory cases.

Plastic Uveitis.

Miss L. P., age 12. "Sore eyes" since babyhood, with redness, lachrymation and occasionally pus. On December 1, 1914, left eye was quiet with normal tension. Right eye, tension plus 3. Sclera purplish and thinned out above. Anterior chamber obliterated except in center. Seclusion of the pupil. No tenderness on pressure. Enucleation advised but refused.

Dr. Edward Jackson observed that unless the eye became quiet enucleation would be proper.

Diabetes-Cataract-Corneal Infiltration.

Mrs. McC., age 61. Asthma 59 years, diabetes mellitus 7 years, and frequent attacks of neuritis of right side for past two years. Four years ago vision of right eye began to fail, blindness ensuing in two years. In April the eye got red but there was no pain, tenderness or swelling.

She consulted me May 3rd of this year, at which time I found sclera congested and cornea so steamy that it was difficult to make out the markings of the iris. Pupils symmetrical and reactions normal. Tension, anterior chamber and iris normal, likewise corneal sensibility. Found corneal infiltration and mature cataract. Perception and projection of light good. Large amount of sugar found in the urine with sp. gr. of 1030. No glaucoma but first appearance suggested it.

Specific Keratitis and Cleft Palate.

Boy, T. S., age 4. One of seven pregnancies. First and third aborted about the seventh month. Second child died at 3 months. Fourth child is 7 and healthy. Fifth is T. S., the patient. Sixth and seventh are living and healthy.

August 1, 1914, was consulted. Child had had sore eye for one week. Muddy iris, contracted pupil, and interstitial keratitis involving lower part of cornea. This seemed to have cleared up by December 1st.

On April 12, 1915, I again saw the patient, at which time the upper portion of the cornea was involved. This partially cleared up but other portions of the cornea became affected. There is cleft palate and bad teeth which I attribute to the specific process.

Dr. H. M. Thompson, of Pueblo, presented five patients showing the following conditions:

Right Eye Progressive Cataract. Left Eye Total Cataract.

Mr. F. H., age 26. Left eye began to fail one year ago. Right eye vision on March 8, 1915, was 20/30 w plus 2 sph. combined w plus 1.50 cyl. ax. 15°.

SYMPOSIUM: GENERAL DISEASE AND THE EYE.

The Ophthalmic Record will publish a symposium on the "Treatment of General Diseases in Their Relation to the Ocular Structures" in the November and December numbers. Representative men in this country and abroad who are closely in touch with this phase of ophthalmology will contribute to the symposium. The interest created a year ago by the symposium on the "Ocular Muscles" has encouraged the editorial staff to arrange this second series of articles on a very timely subject.

NEWS AND NOTES.

Personals and items of interest should be sent to Dr. Emory Hill, 30 North Michigan avenue, Chicago, Ill.

As these columns go to press on the 15th of the month previous to publication, contributors will kindly send in their items before that date.

Dr. Austin A. Hayden of Chicago announces the removal of his office to 25 East Washington street.

Dr. A. A. Williamson has moved from Indianapolis to Portland, Ore., where he will practice ophthalmology

Dr. John O. McReynolds has resigned from membership on the State Board of Health of Texas.

Dr. H. M. Thompson, of Pueblo, Colo., has spent the summer vacation in the mountains of Pennsylvania and Virginia.

The South Baltimore Eye, Ear and Throat Hospital was reopened on September 1st after being closed for part of the summer.

The second annual meeting of the Wisconsin Eye, Ear, Nose and Throat Specialists will be held on October 8 and 9 at Milwaukee.

Sites have been offered in several towns for the Blind Asylum for which the Texas State Legislature has appropriated $325,000.

Dr. W. L. Noble of Chicago is one of a board appointed to examine veteran policemen who have been declared unfit for service by the chief ambulance surgeon of the city.

The following internes have begun service at the Illinois Charitable Eye and Ear Infirmary: Drs. L. G. Dunlap, E. S. Adams, J. J. Magee, J. H. Roth, Otto Green and J. F. Barton.

The Central States Conference on Social Hygiene will be held at the Congress Hotel, Chicago, on October 25 and 26, under the auspices of the Central States Division of the American Social Hygiene Association.

In Detroit, according to the Michigan Secretary of State, 172 physicians and 30 midwives are named as failing to answer the questions on the birth certificates in regard to the treatment of eyes of the new-born as required by law.

The U. S. Public Health Service is conducting experiments in the Marine Hospital, Pittsburgh, to determine the effect of heat and light in the production of glass workers' cataract and other occupational diseases. Surgeon J. W. Schereschewsky has charge of the work.

The following deaths of ophthalmologists are announced: Dr. L. J. R. Coria of Minneapolis, aged 34; Dr. John A. Kenney of Wilkes-Barre, Pa., aged 40; Dr. Charles W. Norris of Lexington, Ky., aged 54; Dr. W. E. Klokke of St. Louis, aged 39; Geheimrat Adolph Weber of Darmstadt, Germany, aged 86; Privat-docent C. Harms of Tübingen, Germany, killed in battle.

The College of the New York Ophthalmic Hospital, a homeopathic institution, announces a course of instruction extending from October 1, 1915, to May 10, 1916, leading to the degree of "Oculi et Auris Chirurgus" which this institution is empowered to confer by act of the New York Legislature. Students are to be assigned to members of the hospital staff as clinical assistants and to be given courses of lectures and recitations. Candidates must have had the M. D. degree for at least one year before entering upon this special course. The entire course costs $150 with additional fee for the final examination for a diploma.

The editor of the *Archivio di Ottalmologia* has recently issued the following statement: "The surgeons of the Neapolitan Ophthalmic Hospital and Clinic have responded unanimously to the appeal of their country in its hour of public obligation.

"With the director, a major in the regular army, are now in military service all the members of his staff, the assistants as captains, the others as lieutenants and sub-lieutenants. The following have already been ordered to the front: Captain Folina, Lieutenant Carotenuto and Sub-Lieutenant Rossi.

"The *Archivio di Ottalmologia* will, nevertheless, continue to be published."

Dr. Sydney Walker of Chicago has returned from France, where he served at the English Base Hospital known as No. 23 General Hospital. This hospital is located at Etaples, forty miles behind the trenches. Dr. Walker and Dr. C. A. Maghy, also of Chicago, were in charge of the eye cases and Mr. Maghy intends to remain another six months.

Recent enactments of various state legislatures are of concern to ophthalmologists. In Arkansas a separate board of examiners has been authorized for optometrists and chiropractors; in Colorado the law exempting optometrists from the supervision of the state board of health has been submitted to a referendum vote and its operation temporarily suspended. Illinois has passed an optometry bill and made further provision for the prevention of infantile blindness. Tennessee has similarly strengthened its laws aiming at the prevention of blindness. Vermont has amended its optometry law to forbid the fraudulent impersonation of the medical profession by the optometrists. In West Virginia optometrists are to be exempted from control by the state board of health. Wisconsin has enacted an optometry bill. Wyoming has provided for medical supervision of school children.

The following is an extract from a letter from Dr. Hanford McKee, of Montreal, who is in charge of a hospital in France.

Since coming to France on February 2nd, there has been little time for anything but work. I have charge of a field hospital of over three hundred beds. We have the beds in large Indian pattern tents, which hold eight beds with bed-side tables and a large central table, and still have lots of room for moving about with a stretcher. I have seven of these tents in a row, making wards of fifty-six beds. We have a large tent for a dressing tent, a large one for a dispensary, two for operating rooms, one for X-ray, and one for laboratory. Williams of Sherbrooke, Munroe of Saskatoon, Morris of Windsor, Nova Scotia, and Bauld of Montreal, look after the surgical work, while Gwyn of Philadelphia does medicine and runs the laboratory. A very efficient staff and they have done some splendid work here. We also have thirty-five nurses, among whom are Miss Galt and Miss Upton, Montreal General Hospital nurses.

The work comes in batches, of course, and when the rush is on we have just all we can do. The surgery varies to all degrees, and we have found the cases do remarkably well with the open-air treatment that we are able to give them. Gwyn has done some excellent work. We have had quite a few cases of what they call spring nephritis. It comes on very quickly, the patient getting to the convulsion stage in a day or two. The condition subsides as quickly as it starts. The gas cases have been very interesting clinically, but like so many things of clinical interest, very disastrous for the patient. Gwyn says they get an acute œdema of the lungs, a non-septic pneumonia, with a bronchitis. The kidneys are also affected, and in some cases, the feet have had the appearance one gets in Raynaud's disease. Gwyn has done well with his cases, with atropine and morphine. Sir John Bradford looks upon the condition as an acidosis and has been working along that line. Our cases have all recovered. A lot of the gas cases came in with marked photophobia and spasm of the lids. This was followed in a few days by quite a severe iritis but whether that was a coincidence or not I am not prepared to say as yet. I have had a lot of eye and ear work, mostly radical surgical methods, as most of the eye injuries are very severe. Most of my time, though, is taken up with administration of the different branches of the hospital, and I don't care to have any more to do or any more responsibility than I have had. The amount of office work in a military hospital of even this size is considerable. We can hear the boom of the big guns here, and can tell pretty well when to get ready for casualties. Some of the men tell very interesting tales, but all are agreed that we need more big guns, and more still. One big Scotchman broke up a discussion on the war the other day, in one of the wards, by saying he thought the first ten years would be the hardest! Another one said, "Man, but it was grand to toss them!" meaning bayonetting them and throwing them over your head. I have never seen anything more sickening in my life than the ambulance train loads that one sees sent in here. Personally I feel very pessimistic over the war, and fear it will last a long while yet. However, we'll hope on and hope ever.—*Canadian Medical Journal.*

CHICAGO EYE CLINICS.

Hour.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
9 A.M.	Richard S. Pattillo (P.-G.) G. W. Mahoney (Poli.) R. B. Stephenson (P.-G.) Carl Wagner (E.E.N.T.)	*Geo. F. Suker (P.-G.) C. H. Francis (Poli.) A. Duncan (P.-G.) A. G. Wippern (E.E.N.T.)	W. F. Coleman (P.-G.) S. M. Hager (Poli.) H. N. Lyon (P.-G.) Carl Wagner (E.E.N.T.)	G. W. Mahoney (Poli.) Rich'd S. Pattillo (P.-G.) R. B. Stephenson (P.-G.) A. G. Wippern (E.E.N.T.)	C. H. Francis (Poli.) R. B. Stephenson (P.-G.) J. A. Cavanaugh (E. E. N. T.)	S. M. Hager (Poli.) C. W. Hawley (P.-G.) H. J. Morlan (P.-G.) A. G. Wippern (E.E.N.T.)
10 A.M.	Brown Pusey (N.W.U.) Geo. T. Jordan (N.W.U.) Robert Blue (N.W.U.) Every day, 10-12 A. M. Harry Gradle (E.E.N.T.)	J. R. Hoffman (E.E.N.T.)	Harry Gradle (E.E.N.T.)	J. R. Hoffman (E.E.N.T.)	Harry Gradle (E.E.N.T.)	J. R. Hoffman (E.E.N.T.)
1 P.M.	M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) Emily Selby (Inf.) *H. W. Woodruff (Inf.) *Oscar Dodd (Inf.) C. A. Leenheer (Inf.) D. W. Eiss (Inf.) E. R. Cressley (Inf.) C. C. Clement (Inf.) E. V. L. Brown (County) and Geo. F. Suker (County) Daily, 2:30 P. M. W. A. Fisher (E.E.N.T.)	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) E. K. Findlay (Inf.) Wm. E. Gamble (Inf.) J. B. Loring (Inf.) S. L. McCreight (C.C.S.) Robt. Von der Heydt (Inf.) L. G. Hoffmann (Inf.) A. P. Hunneman (Inf.) M. Goldenberg (Inf.) Francis Lane (Inf.) H. Walker (Inf.) W. A. Fisher (E.E.N.T.)	M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) Emily Selby (Inf.) *H. W. Woodruff (Inf. *Oscar Dodd (Inf.) C. A. Leenheer (Inf.) D. W. Eiss (Inf.) E. R. Cressley (Inf.) C. C. Clement (Inf.) Oliver Tydings (E. E. N. T.)	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) *Frank Allport (St. Luke's) *Frank Brawley (St. Luke's) E. K. Findlay (Inf.) Wm. E. Gamble (Inf.) *Paul Guilford (St. Luke's) *Casey Wood (St. Luke's) *T. A. Woodruff (St. Luke's) J. B. Loring, (Inf.) S. L. McCreight (C.C.S.) Robt. Von der Heydt (Inf.) L. G. Hoffman (Inf.) A. P. Hunneman (Inf.) M. Goldenberg (Inf.) Francis Lane (Inf.) H. Walker (Inf.) W. A. Fisher (E.E.N.T.)	M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) Emily Selby (Inf.) *Oscar Dodd (Inf.) C. A. Leenheer (Inf.) D. W. Eiss (Inf.) E. R. Cressley (Inf.) C. C. Clement (Inf.) H. W. Woodruff (Inf.) W. A. Fisher (E.E.N.T.)	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) E. K. Findlay (Inf.) Wm. E. Gamble (Inf.) J. B. Loring (Inf.) S. L. McCreight (C.C.S.) Robt. Von der Heydt (Inf.) L. G. Hoffman (Inf.) A. P. Hunneman (Inf.) M. Goldenberg (Inf.) Francis Lane (Inf.) H. Walker (Inf.) Oliver Tydings (E. E. N. T.)
3 P.M.	*Wm. E. Gamble (U. of I.) Wm. H. Wilder (Rush) H. S. Gradle Daily 3-5 (E. M. D.)	R. J. Tivnen (M. H.)	W. Allen Barr (C.C.S.) *Wm. E. Gamble (U. of I.)	Wm. H. Wilder (Rush) R. J. Tivnen (M. H.)	W. Allen Barr (C.C.S.)	Geo. F. Suker (P. G.) 2-5 H. Cuthbertson A. Duncan
4 P.M.	W. F. Coleman (P.-G.) H. N. Lyon (P.-G.) 2-5	C. W. Hawley (P.-G.) 2-5 J. F. Campbell (P.-G.) H. J. Morlan (P.-G.)	J. B. Loring (U. of I.) E. K. Findlay (U. of I.) G. F. Suker (P.-G.) 2-5 H. Cuthbertson (P.-G.)	C. W. Hawley (P.-G.) J. F. Campbell (P.-G.) H. J. Morlan (P.-G.)	W. F. Coleman (P.-G.) 2-5 H. N. Lyon (P.-G.)	

*Special operative eye clinic.

ABBREVIATIONS:

C. C. S.: Chicago Clinical School, 1844 W. Harrison Street.

E. M. D.: Emanuel Mandel Dispensary, 1012 Maxwell St.

County: Cook County Hospital, W. Harrison and Honore Streets.

Inf.: Illinois Charitable Eye and Ear Infirmary, Peoria and Adams Streets.

M. H.: Mercy Hospital.

Poli.: Chicago Policlinic and Hospital, 221 W. Chicago Avenue.

P.-G.: Post-Graduate Medical School of Chicago, 2400 Dearborn Street.

N. W. U.: Northwestern University, 2431 Dearborn Street.

Rush: Rush Medical College, W. Harrison and Wood Streets.

St. Luke's: St. Luke's Hospital, 1416 Indiana Avenue.

U. of I.: College of Medicine, University of Illinois, Congress and Lincoln Streets.

THE
OPHTHALMIC RECORD
A MONTHLY REVIEW OF THE PROGRESS
OF OPHTHALMOLOGY

Vol. XXIV CHICAGO, NOVEMBER, 1915 No. 11, New Series

ORIGINAL ARTICLES

OCULAR PHENOMENA ACCOMPANYING THREE CASES OF GASTRO-INTESTINAL DISORDER.*

BY
HIRAM WOODS, M. D.
BALTIMORE, MD.

The cases are as follows:

1. Chronic Uveitis, apparently traced, after two years, to Alveolar Absorption.

Lawyer, 48 years old, consulted me in 1910 for refraction correction—compound Hyperopic Astigmatism and Presbyopia. Eye grounds normal. I did not see him again until April, 1913. For several days he had had hyperaemia of the left conjunctiva without secretion. The eye was slightly sensitive to touch. Six days later he showed left Descemetitis, for which no explanation could be found. This condition persisted for several months. Vision, usually normal, never fell below 20/30, with unaffected form and color fields. There was occasional circum-corneal hyperaemia. The pupil contracted sharply several times but no synechia formed. The right eye remained normal. Late in November, while at court trial table he became conscious of something wrong in the left eye. Covering the right, he found the left was practically blind. The next day vision was about 3/200, and the media so cloudy that nothing could be seen. Descemetitis covered nearly the whole cornea. In two weeks vision had improved to 20/200. During the winter of 1913-14, the eye remained in about this condition; persistent conjunctival hyperaemia and Descemetitis: Vision varying from 20/100 to 10/200. In March, 1914, there developed, in the space of two or three days, posterior synechia which yielded slowly to atropia. The right eye had remained free of trouble during the year of inflammation in the left. On the 22nd of April, 1914, there was right Descemetitis. The left eye at this time showed a hazy vitreous with muscae, but I could find neither fundal lesion nor scotoma. Vision on this date was: Right, 20/20; left, 15/200. From this time until I went on my vacation, July 15th, the only change was that vision improved in the right to 20/15; left 20/50 to 20/70. This was the case when I saw him September 30th, and persisted with cônjunctival hyperaemia and Descemtitis in both eyes, until January, 1915. In October and November he suffered sudden transient attacks of increased vitreous clouding with reduction of vision.

---

*Read at meeting of the American Ophthalmological Society, New London, Conn., July 6 and 7, 1915.

On January 16th of this year, 1915, a large upper left molar—"dead tooth"—which had been crowned several years previously and had become painful, was extracted. A drop or two of pus followed. Two days later both eyes became violently red, and vision fell in the right eye from 20/15 to 20/100, and in the left eye to 5/200. The vitreous of each eye was so cloudy I could not see the fundus. That afternoon he had to be led into the hospital. Under diaphorosis, etc., he gradually improved. His present eye condition (June, 1915), is chronic conjunctival hyperaemia, and Descemetitis in both eyes. Vision: Right, 20/15; left, 20/20.

This is the eye history for a little over two years. Turning now to efforts to determine etiology—I have long since looked upon conjunctival congestion without secretion as a harbinger of mischief. It is seen as a first symptom of recurrent iritis, episcleral and uveal inflammation. It sometimes comes and goes without explanation, though the more carefully we inspect the teeth, look for nasal troubles, and inquire into what we vaguely call digestive disturbances, the fewer become "idiopathic" cases. There was no reason to suspect lues or tuberculosis. Blood and clinical examinations, however, excluded both. There was no history of recent acute illness. The crowned dead molar excited my suspicion from the beginning; but it was giving no pain and the dentist pronounced it free from disease. Learning that the patient had been under the care of Dr. William I. Messick, associate in gastro-intestinal diseases at the University of Maryland, I asked the doctor to join me in attendance.

Some ten years or so before the eye trouble Dr. Messick had been consulted for acid eructions, constipation, and a train of remote disturbances, attributed to the gastro-intestinal canal. These so-called toxic evidences were closely connected with the mucous membrane of the nose and eye. Swelling of the turbinals, and recurrent conjunctival redness had been observed over a period of years. Dr. Messick thought that he had always been able to trace these things, at least coincidentally, to errors in diet—rather overeating than partaking of any particular article of food. Be this is it may, there had been found great variation in the hydrochloric acid contents, usually a hyperacidity. Indican was frequently found in excess, and again would disappear. Undigested meat was found in the stools. Obstinate constipation usually followed free eating of meats, and at all times was hard to prevent. During the course of uveitis, with sudden depressions in vision, Dr. Messick found the same association, observed through previous years, when the toxins (?) affected mucous membranes. For instance, the sudden failure in vision in November, 1914, was preceded by free indulgence in eating, with characteristic findings in urine and stools. Finally there came the sudden collapse of both eyes, after extraction of the crowned tooth with evacuation of pus. Before this, systematic physical exercise, and regulation of diet, had partially remedied the constipation habit. The flare-up of uveitis when the alveolar pus sac was brought into contact with freshly opened tissue, seems to indicate an immediate absorption, the toxins (or whatever the offending substance), going directly to the eyes. Dr. Thomas R. Brown and Dr. William S. Thayer saw the patient after the tooth experience. Dr. Brown's examination showed achylia, although the tendency to hyperacidity in Dr. Messick's previous test was pronounced, and the condition returned later. Dr. Brown has told me he thinks it quite possible that absorption from the alveolar pus sac could produce all the varying intestinal symptoms, and the ocular inflammation. Dr. Thayer wrote: "The relation of the ocular attacks to the attention of the teeth seems to me extremely significant. He has a good deal of pyorrhea. . . . As one considers the whole situation I should be inclined to lay more stress on the teeth than on anything else. . . . Very often in arthritis one finds a direct reaction after interference with the inflammatory focus, an alveolar abscess, or the scraping of the gums in pyorrhea at the beginning of the treatment when there is still a great deal of pus, and my feeling would be that he ought to have those gums washed every month for a while; they ought to be kept absolutely clean after the immediate attention that is now being given to those teeth which were particularly affected."

Improvement has been steady since January of this year, when the tooth was extracted. The eyes are still red, and Descemetitis persists. Vision is normal in both eyes. Physical exercise and abdominal massage are getting the credit for improvement in constipation; maybe justly.

Case 2. Para-central color scotoma.

Dr. X., 49 years old, first consulted me in February, 1906, for refraction correction. Vision was normal in each eye. Fields were not taken. Four years prior to this consultation, Dr. I. E. Atkinson, now deceased, had suspected commencing chronic nephritis. Urinalysis failed, however, to show anything suggestive of this condition. I did not see Dr. X. again professionally for six years, March, 1912, when he came because vision was poor. Tests at various times during four days give vision from normal to one-half or less. Under euphthalmine dilation, I could find nothing abnormal. In each eye there were contracted form fields, with enlarged red scotoma extending from Mariotte's spot to the fovea. Figure 1 shows the form fields for right and left eye at two successive examinations; the inner line, March 14, outer April 8th. They also show the red para-central scotomata. Limitations of color perception are not recorded, but they did not extend over ten or fifteen degrees from the fixation point.

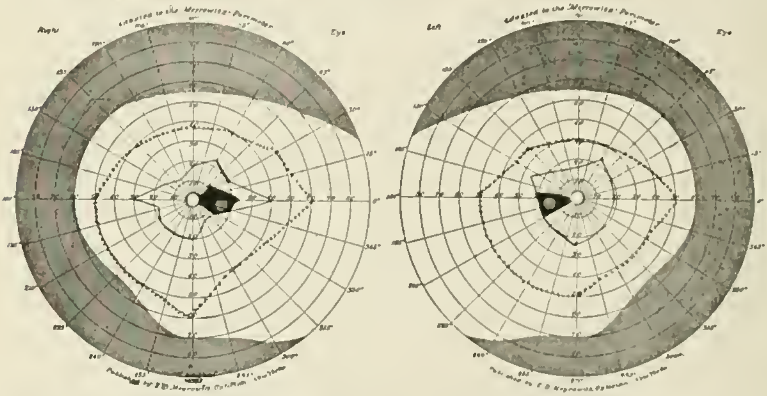


Fig. 1.

Dr. X. is a very large man, weighing at the time of the examination nearly 300 pounds. He used neither tobacco nor alcohol. Urinalysis showed nothing except indican, apparently in excessive quantity. Fecal odor of the breath was decided. He was sent to the University Hospital and put under Dr. Messick's care. His report, embracing as it does an illness just prior to the patient's coming to me, is as follows: "A month before coming to Baltimore, while on his way east from Indiana, the patient was taken ill on the train with severe gastric pain and was confined two days in a hospital in Pittsburg. There had been no recurrence of these acute symptoms, but there were loss of appetite, constipation, a fecal breath, and gingivitis. The urine at first showed nothing except indican. During the month that Dr. X. was at the University Hospital, there was occasionally glycosuria, which would disappear over night. At no time could albumin or casts be found. There was marked gastric hyperacidity. Stools showed muscle fibre, free fat and fatty acids. Treatment consisted of anti-acid diet, purgations, etc., and for a time he seemed to improve." (It was then that the improvement in form field was noted, as shown in Figure 1.) Severe pain returning toward the middle of April, the man was referred to Dr. Frank Martin. Radiographs revealed an almost complete obstruction of the transverse colon, near the splenic flexure. Operation traced this to a band of fat around the colon, and revealed gall stones, which had never been suspected. These were removed. Recovery from operation was uninterrupted, and two months later central vision was normal, but with practically no change in the field limits. However the red scotoma had disappeared from the right eye. Up to July 7, 1914, it had remained in the left. After operation the patient remained well until May, 1913, when he had an attack of abdominal pain, with swelling in the right hypochondrium. The eyes were not affected.

Dr. Martin opened an abscess communicating with the gall bladder. Dr. X. was not seen again professionally until February of this year, when he came with blurred sight, and examination showed vision of one-fifth in the right and two-thirds in the left eye. In the right fundus there were several spots of round exudate above the fovea. Traces of sugar were found in the urine. We have found glycosuria occasionally for two years. It has usually been after indulgence in starchy food. Only in February last did the eyes show trouble at such periods. Within a week, and after free purgation, rest, regulation of diet, etc., the spots disappeared from the right retina, and sugar from the urine. Vision became normal.

Case III. Shifting Toxic (?) Scotomata.

3. Man, 42 years of age, consulted me April 8, 1913. He is head of a corporation and carries large responsibilities. His habits are similar to those of many successful business men; works hard while he is at it, sacrifices leisure to business, if necessary, and indulges sparingly in tobacco and alcohol, often going for weeks without the latter. His business compels him "to frequently play the role of entertainer," to use his own phrase, and he says it is usually after these, not always voluntary, experiences that he has the visual changes to be narrated. His general health has always been excellent. In 1901 he underwent operation for acute appendicitis, but this is his only illness. His first eye trouble occurred about fifteen years ago. He consulted Dr. Pollard of Atlantic City. The trouble was confined to the left eye, and he says that Dr. Pollard told him he would not hesitate to attribute his visual defects to the excessive use of alcohol or tobacco, if he did not know that he was addicted to neither. The patient described quite accurately a left para-central scotoma. This was easily demonstrated at my first examination, and is shown in Figure 2. Near the area of lost perception there is another where the white disc is perceived only dimly. This condition runs through several fields, the areas of blindness and dim vision changing in shape and shifting in position. Figures 2 to 5 show this at different dates. Intermediate fields are omitted. (Lettering is identical in the ten charts, 2 to 11.)

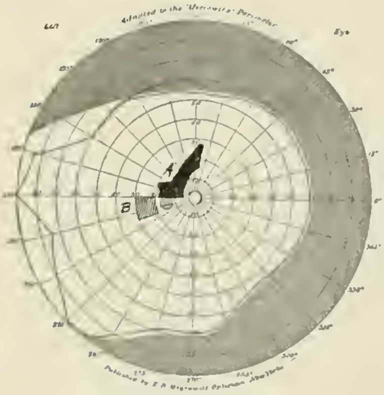


Fig. 2.
A—Scotoma. B—Dim Perception.
April 8, 1913.

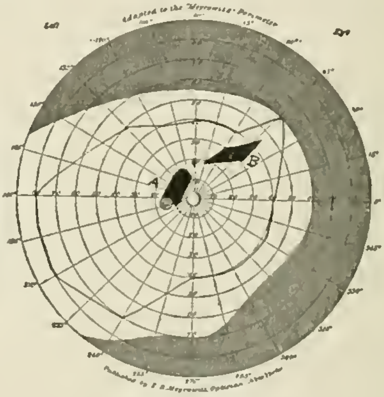


Fig. 3.
A—Scotoma. B—Dim Perception.

The reason for his consulting me was that he had noticed the day before a dim area in the right eye similar to that in the left eye which had taken him to Dr. Pollard years ago. Ophthalmoscopic appearance was negative. Distant vision was: Right, 20/40, 20/24 by +1.5 which equaled his Hm. Left, 20/30 with the same Hm. Right field is shown in Figure 6, and has the general characteristics of that of the left eye. There was an absolute scotoma below the fovea with an adjacent area of dim perception in the lower temporal field.

Three days before he saw me, he went to an after-theater party, where he drank, he says, not over two glasses of light wine. He never drinks whiskey. Next day he was exposed to a cold wind while motoring, and was conscious of pain in his right temple. I thought the case one of acute retro-bulbar neuritis, but whether due to unusual susceptibility to alcohol or to exposure I could not say. However he was given purgation, and told to abstain absolutely from alcohol and tobacco. One month from the date of his first visit, he had the

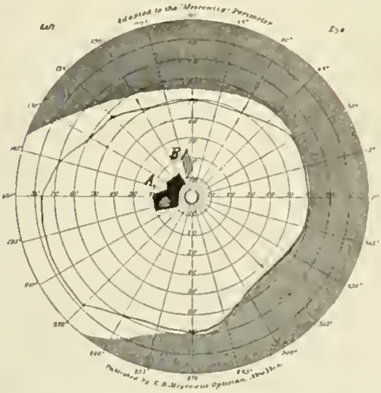

Left
Eye
Adapted to the "Meyrowitz" Perimeter
A
B
Published by E.B. Meyrowitz Optician, New York

Fig. 4. A—Scotoma. B—Dim Perception. Oct. 5, 1913.

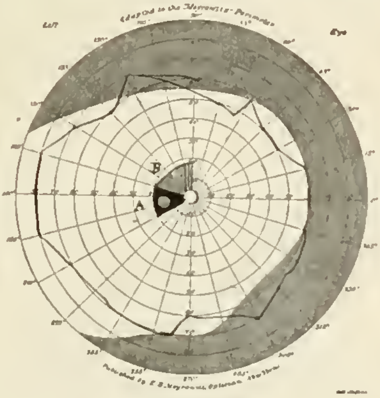

Left
Eye
Adapted to the "Meyrowitz" Perimeter
A
B
Published by E.B. Meyrowitz Optician, New York

Fig. 5. A—Scotoma. B—Dim Perception. May 7, 1914.

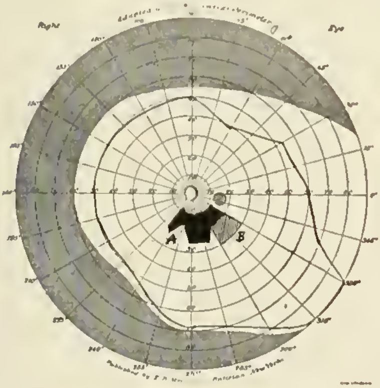


Fig. 6. A—Scotoma. B—Dim Perception. April 8, 1913.

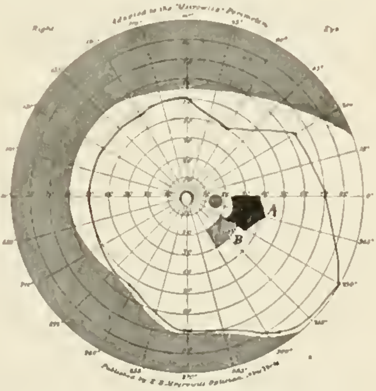

Right
Eye
Adapted to the "Meyrowitz" Perimeter
A
B
Published by E.B. Meyrowitz Optician, New York

Fig. 7. A—Scotoma. B—Dim Perception. May 8, 1913.

right field depicted in Figure 7. It will be noted that the absolute scotoma, with adjacent dim area, has shifted into the temporal field. Figure 8, taken one week later, shows no absolute blindness, but the area of dim vision has shifted to the fovea and perifoveal region. Figure 9, taken about four weeks later, shows a clear foveal region, but with the return of the dim area in the lower and outer temporal quadrant. The fields were taken with a 5 mm. disc, and I was careful to eliminate change of position; I think I succeeded.

Figure 10 shows the right field on 5th of October, 1913, after a fall from grace in the shape of a dinner. Central vision was 20/20, but there was an absolute scotoma in the nasal field, and an area of dim perception in the temporal. On the 7th of May, 1914, after a similar dietetic experience, the right eye presented the field shown in Figure 11. There is an area of absolute blindness in the temporal field, just above Mariotte's spot, and dim area below.

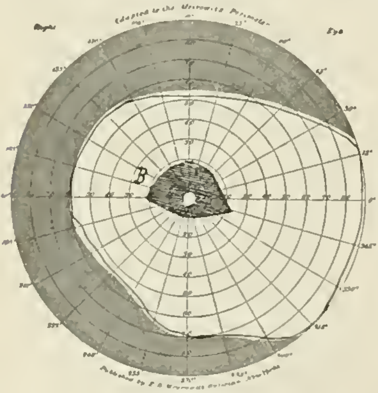


Fig. 8. B—Dim Perception
May 9, 1913.

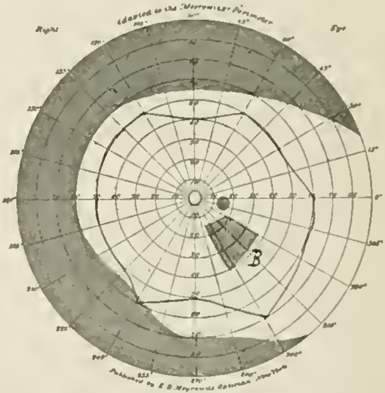


Fig. 9. B—Dim Perception.
June 4, 1913.

I have omitted the lines for color because they merely varied with the form limits. Of course they could not be noted in the scotomatous areas.

The patient was put under Dr. Messick's care soon after I saw him in 1913. Dr. Messick reported gaseous eructations, constipation, indicanuria in excess and functional gastric hyperacidity. A striking feature about the case is that the blood pressure has never been higher than 95 mm., measured on the Tycos instrument. I did not see the patient professionally after the summer of 1914, until I asked him to come to my office on the 21st of June, 1915. He told me he had been entirely well and free from eye attacks for a year; that the restricted diet ordered by Dr. Messick was not enough to keep up his nutrition, and he had consulted Dr. Thomas R. Brown, who confirmed Dr. Messick's findings but allowed him a freer diet. The patient himself says that he attributes his freedom from eye attacks during the past year, not to any virtuous abstinence from an occasional glass of wine or cigars, but to his self-prescribed daily use of a purgative water. Be this as it may, he is in excellent health; right eye has 20/15 vision without defect in either form or color fields. The left has 20/20 with a negative scotoma in the upper temporal field adjacent to Marriotte's spot. His limits for blue and red are about five and ten degrees inside a slightly contracted form line.

These three cases have one feature in common—classical symptoms of intestinal stasis, with remote troubles, rightly or wrongly attributed to the intestinal condition. The remote effect in case one was a chronic uveitis, and the ultimate result indicates that for nearly two years there was an unrecognized focus of infection in the alveolar process. The case was submitted to every means of diagnosis except an X-ray picture. The primary lesson is, that to the multitude of councilors, the oculist is forced to call in to help in a diagnosis of the cause of uveitis, must often be added the X-ray expert. Again, the numerous relapses in visual acuity were always accompanied by evidence of renewed intestinal disturbances, so one cannot resist the suspicion that the alveolar focus may have been a later development; true, the cause of the final outbreak in January, 1915, but not the original cause of uveitis two years previous. One cannot say definitely. I think, however, that

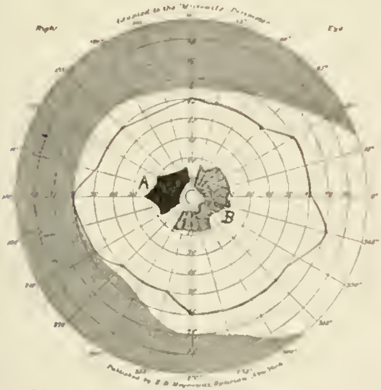


Fig. 10. A—Scotoma. B—Dim Perception. Oct. 5, 1913.

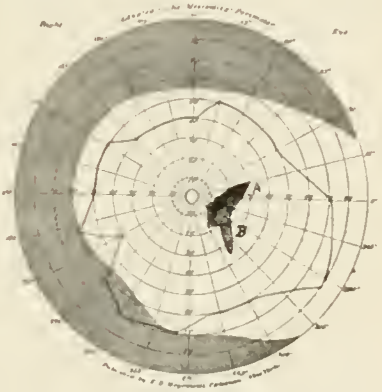


Fig. 11. A—Scotoma. B—Dim Perception.

Dr. Thayer is right in attributing to the teeth the chief causative factor. This belief is confirmed by Dr. Brown's opinion that absorption from an alveolar process might have produced many features of the intestinal disorders. de Schweinitz in his London address of 1913 upon the "Pathogenesis of Chronic Uveitis excluding the Syphilitic, Tuberculous, and Sympathetic Varieties," quotes Harold Sims to the same effect, as follows: "Doubtless in many patients with pyorrhea proper investigations will reveal indicanuria, acidosis, and in general terms, the usual signs of so-called auto-intoxication, and while the treatment to relieve the perverted metabolism may be of value, there is no evidence of a satisfying character that the acidosis, etc., are the cause of the septic mouth condition. It is more likely that oral sepsis originates the auto-infection, as well as the local inflammatory processes in joints and uveal tract tissues."

The second case shows usual laboratory symptoms of intestinal stasis, with eye complications quite characteristic of something else—toxic amblyopia, usually from tobacco or alcohol. Yet the patient used neither. Further evidence of infection is found in the gall-stones and subsequent abscess, while the occasional glycosuria emphasizes, if nothing else, a tendency to a carbo-hydrate intolerance. The case seems to show the possibility of a distant infection producing, probably in the optic nerve, the same functional disability which characterizes the intake of certain toxic substances. It opens up the whole question of formation of toxins following infection —a doctrine ably presented and defended by Alex. C. Abbott in de Schweinitz's paper. Again, the sudden failure of vision in the right eye this past winter was accompanied by exudates in the retina. At the same time there was transient glycosuria, and laboratory examination by Dr. Messick gave positive evidence of what we call intestinal auto-intoxication. Within a few days with clearing of intestinal conditions, glycosuria and the retinal spots disappeared. Have we not here a condition like that presented in the retinitis of pregnancy (wrongly I think called albuminuric because of a coexisting albuminuria) and disappearing as soon as the uterus is emptied? At the same time the kidneys return to normal unless there is a pre-existing nephritis. And are we not forced to accept as the most likely cause a toxemia from the intestines, finding in the eye its "combining affinity," to use Abbott's expression, be it the result of chemic changes as is very improbable, or the holding up of bacteria in the intestines, as is generally believed?

The chief teaching of the case is the connection between undoubted infection in the intestinal canal and eye symptoms which must be explained on the basis of toxemia, if explained at all. Their transient nature seems to exclude other causes. As to the third case I have never seen anything like these shifting scotomata. The only analogy I know of is the migrain scotomata which are so hard to record because of their short existence. At one time I was disposed to regard the attacks as a sort of abortive migrain, but this became evidently absurd. Arterial spasm suggests itself; but, even so, we do not know the cause. The clear relationship between these occurrences and the intake of anything alcoholic was too apparent to be disregarded. Freedom during the past year when intestinal stasis seems to have been overcome, tends to support Horner's contention regarding the relationship of alcohol and tobacco amblyopia to intestinal disorders; that the presence of the latter is necessary to make the former effective in producing the chemical agent, or whatever it is, which affects the optic nerve, probably causing a local anaemia.

What we call "Remote Results of Perverted Metabolism" is a far reaching problem. My friend Dr. Thomas R. Brown, with whom I have seen several cases, has allowed me to use the manuscript of a paper read during the past winter before the Pittsburg Academy of Medicine and now published in the Pennsylvania Medical Journal, June, 1915. The title is, "The Medical Aspect of Intestinal Stasis," which is defined as "the result of atony of the intestines and abdominal muscles, allowing the viscera to prolapse, with tendency to kinking of bowels, and with the possibility of content staying far beyond the normal limit at or above the involved area." The local results are:

"A stasis of fecal contents, generally associated with constipation, but sometimes with apparent diarrhoea, the possibility of changes in mucosa and musculature, of the formations of erosions and ulcerations, the development of a low grade of peritonitis, a more and more sluggish peristalsis, with longer and longer stay of fecal column, an increased permeability of the intestinal wall to bacteria and to other substances, a loss of sphincter action so necessary to fecal propulsion, the development of adhesions, deleterious influences on the local secretions, reflex disturbances in the chemical, sensory or motor spheres of other portions of the digestive tract or even outside the digestive apparatus; disturbances of the nervous mechanism by pressure, by traction and possibly by the influences of toxins, change in the cultural conditions, with the possibility of the appearance of micro-organisms not found in conditions of health or of overgrowth of certain bacteria normally present in minimal amount, with diminution of certain of the strains normally found. . . . Careful studies of the stool and quantitative estimation of the diastatic and tryptic ferments therein, have made us feel that functional or even organic disturbances of the pancreas may be met with in certain of these cases, also suggested by the temporary glycosuria met with in certain of the acute toxic outbreaks. The skin lesions are peculiarly interesting because of the isolation by Eppinger, from the stool in certain cases of auto-intoxication of a ptomaine, which even in great dilution produced marked urticaria, if applied locally."

After presenting local and distant symptoms of stasis, the writer reviews indican and the ethereal sulphates, and concludes that they have not much significance. Regarding the theoretic explanations of distant effects, he concludes that auto-intoxication is at present the best solution. As to the nature of this intoxication, he asks the following:

"Is it a toxin normally present but in excess? Or, due to this stasis, have the liver and other portions of the protective mechanism become insufficient (possibly due to repeated mild anaphylactic reactions from proteid poisoning, as suggested by Longscope's recent work) and toxins normally destroyed by the liver allowed to get into the general circulation? Or is there a tendency in these cases for an overgrowth of certain forms of bacteria? Or is the toxemia due to the products of certain ferments in excessive amount or perverted? . . . There must be a breaking down of the natural protective mechanism of the body. In the first place, the intestinal mucous membrane, in the second place, the liver, in the third place, certain glands of internal secretion, notably the thyroid, suprarenal body and pituitary gland. . . . If these protective organs and tissues do not function properly then the toxins reach the general circulation from which they may be eliminated in the respired air, the urine, the stool, the sweat, possibly producing functional disturbances or permanent lesions in their excretion. If this excretion is not sufficient, if the body as a whole, or certain organs or tissues have a lowered resistance or increased susceptibility, we then have the picture of auto-intoxication; in the one case producing a picture of psycho-neurasthenia, in another confining its symptomotology largely to the gastro-intestinal tract and possibly affecting some portion far removed from the primary lesion, and in still another group of cases affecting one organ alone, either due to its lowered resistance or its increased susceptibility, or possibly to a definite specificity of toxin. . . .

"That the poisons cannot be demonstrated is not so much proof of their absence as of their extreme complexity and of the minimal amounts in which they must be present in the blood, urine, and stool. . . .

"From the facts presented in the foregoing paper can we reconstruct the picture of intestinal stasis and the symptoms it produces? If we depend solely upon proven phenomena this is not possible; there would be too many gaps. The image would be blurred in many of its salient features. But if we believe with Brieber that 'our researches in the domain of physiological chemistry are as yet so incomplete, so insufficient that a negative result proves nothing at all,' and with Eppinger that persistent research may lead to the isolation of many of the intestinal toxins, and feel that a clean cut picture on definite possibilities is better than the indistinct image which must come if only proven facts are accepted, then I think we are justified in trying to reconstruct and visualize the symptom-complex of intestinal stasis."

This extended quotation shows two things: First, all explanations are hypothetical; secondly, the problem involves knowledge of structure and functions of which we know very little. When we attempt to trace a path from an intestinal infection, even admitting existence of toxins, to perverted eye function or lesion, we are without a solid basis for reasoning. There remain only observed clinical facts; yet these facts are too suggestive to allow dismissal.

IRITIS DUE TO INFLUENZA.

BY
WENDELL REBER, M. D.,
PHILADELPHIA, PA.

On February 15, 1915, A. S., aged 34, a locomotive fireman, presented himself in my service at the Samaritan Hospital, stating that for two or three days he had had a foreign body sensation in his right eye. Thoroughgoing examination (including staining) discovered no foreign body at all. There was, however, slight pericorneal haze, an irritable eye that was a bit lowered in tension and a little ciliary tenderness. The pupil was of the same size and mobility as its fellow. The media were perfectly clear, the optic nerve head somewhat hyperemic, the retinal veins very full, dark and tortuous. Vision equalled 6/6 in both eyes. The patient was told we feared he was developing iritis. He was cautioned not to use the eye, salicylates were ordered tentatively and he was urged to report the following day for observation. It was perfectly evident that he scouted the idea that any serious trouble was impending. This was borne out by the subsequent developments of the case. He did not reappear at the clinic for four days, when he presented himself with a florid iritis attended with terrific pain. Orthodox local treatment was instituted, the salicylates continued, (as he vehemently denied any and all venereal infection), and a sample of blood was taken from the median basilic vein for laboratory tests. The blood was sent to Dr. Claude Brown who reported 48 hours later as follows:

In the case of Mr. A. S.. the complement-fixation tests are as follows:

Wassermann	
Noguchi	Negative
Cholesterin	Negative
Gonococcus	Negative
Pneumococcus	Negative
Streptococcus	Negative
Staphylococcus albus	Negative
Staphylococcus aureus	Negative
Micrococcus catarrhalis	Negative
Influenza	Faintly positive

I would suggest the use in this case of influenza mixed bacterin.

The following day the patient reported that he was having frightful pain (in the fifth nerve distribution and in the eye), and this in spite of vigorous atropine and salicylates. The pupil was one-third dilated and there were numerous small synechiae with much exudate on the anterior capsule. The ciliary injection was intense, and the anterior chamber quite deep. Vision equalled 2/60. An injection of influenza-mixed sero-bacterin (sensitized) was given at 11 a. m., the B syringe (Mulford) being used, with the following content:

250 million Bacillus influenza.
250 million Staphylococcus aureus.
250 million Staphylococcus albus.
250 million Streptococcus.
250 million Pneumococcus.
250 million Micrococcus catarrhalis (group).

The salicylates were withdrawn. By four o'clock of the same day (five hours later) he reported by telephone that he was entirely free from pain.

The next day he reported that he had slept the whole night without any pain whatsoever and he was perfectly comfortable at the time of report. (This is in line with our usual experience in iritis after the use of bacterins.) The eye was much quieter, the exudate at the margin of the pupil less marked and the vision equalled 5/60. The next day the improvement continued, vision equalled 5/22 and the exudate had almost completely disappeared from the iris. The pupil by this time was fully dilated leaving some debris on the anterior capsule of the lens. The next day (72 hours after the injection of the bacterin) the eye was practically free of irritation externally, although the fundus was badly congested, the vision being on this day 5/12. The vitreous was still slightly hazy. Another injection of sensitized serobacterin of influenza mixed was made this day the B syringe again being used. The eye remained perfectly quiet and in 3 days the vision returned to normal, the vitreous having cleared up. The optic nerve and retina were by this time practically normal.

During all this time the patient had had absolutely no internal treatment other than the injections of sensitized influenza serobacterin. Locally atropine and dionin were employed in the usual fashion. At this date the patient was returned to the care of his own physician on consultation with whom it was decided to place him on mixed treatment (mercury and iodine in the familiar 1-2-3 mixture). His family physician remarked that the patient had been a railroad man for ten years and the chances were that he had had a venereal infection at some time. For 3 weeks the patient took 1/24 gr. of bichloride of mercury and 10 grs. of potassium iodide 3 times daily. Then one day suddenly the right eye flared up again and by the time we saw him 24 hours later, violent plastic iritis, classic in type, had established itself. The pupil was 3 mm. in diameter, dimly seen, irregular of outline, and the entire pupillary area as well as the inner third of the iris were covered with a whitish dense exudate. It should be particularly noted that this flareback occurred in spite of the mixed treatment he had been on for 3 weeks. For 2 nights the patient had not slept at all on account of the terrific fifth nerve and intraocular pain. The mixed treatment was withdrawn.

An injection of sensitized influenza serobacterin (C syringe which has twice the content of the B syringe above mentioned) was promptly made with the customary complete relief from pain in 6 hours. The next day the exudate in the anterior chamber had begun to curl up at the edges like a bit of parchment. The following day it had assumed a half-moon shape, the day after that a crescent moon shape and on the fifth day after the injection was made not a trace of the exudate could be found except with a plus 7.00 sphere in the ophthalmoscope revealing some fine debris on the anterior capsule. The pupil was fully and evenly dilated and the eye absolutely quiet. Five months have now elapsed without any further manifestation of irritability on the part of the eye, and the patient has been working as a locomotive fireman for 4½ months.

At the time of the flareback, I called up the general medical man in the case and he stated that in early January (that is about 5 weeks before the iritis developed) he had treated the patient for an obscure low grade inflammatory condition which at that time he had regarded as a muscular rheumatism. There was no articular involvement whatever. He was now inclined, however, to view it as one of the aberrant types of influenza. I lay much stress on his verdict as he is one of our most discriminating internists.

Here then was an instance of plastic iritis of the classic type without venereal basis that was in all probability due to a post-influenzal toxin. It goes far to show that clinically we cannot with any certainty predicate the etiology in a given case of iritis. Without the aid of the laboratory, no true idea of the etiology could have been arrived at in this case nor could the treatment have been otherwise than empiric. The results of the treatment far outran all expectation. They furnish much food for thought.

A case of streptococcal iritis has been reported by Bradbourne (Ophthalmology, Vol. VIII, page 175) and we are gratified to place on record what we believe to be an iritis that seemed to be due entirely to the toxin of influenza.

THE CONSIDERATION OF SYSTEMIC DISEASES AFFECTING THE OCULAR TISSUES.*

BY

FRANK BRAWLEY, M. D.

CHICAGO.

The relations of metabolic disturbances to disease of the eyes, and particularly to intraocular disease, are becoming increasingly important as physiological chemistry is better understood and more frequently applied to these problems. It is the privilege of the ophthalmologist to see many of the earliest evidences of general disease, and if he will but recognize them it is within his power to do great things for preventive medicine.

The well-trained internist with adequate laboratory facilities should be called upon for an exhaustive inquiry into the systemic condition of our patients who are suffering with serious or unusual ocular diseases, particularly the inflammatory and intraocular types. Such an examination should consist first of a thorough study of the physical findings supplemented by tests of the stomach contents, stool, a twenty-four hour urine specimen, blood, blood-pressure, and where necessary the Wassermann and tuberculin tests, or even roentgenographic studies. It is quite impossible to outline a proper diet, medication or eliminative measures empirically. Many symptoms of stomach-bowel disturbances now considered to be reflex from ocular disorders would receive proper classification and a better understanding if studied in this way.

The management of retinal hemorrhages should be mainly in the hands of the qualified internist. In fact it should be his function to protect patients from such a disaster, as he is daily caring for those cases of arterial hypertension, cardiovascular Bright's disease and toxemias which are responsible for such hemorrhages. Fox and Batroff found in a series of retinal hemorrhages that 80% occurred in cases with arterial hypertension, and 40% were in cases of interstitial nephritis. They report two cases of retinal hemorrhage where all findings save those showing a toxemia of intestinal origin were negative. These two cases showed vertigo, persistent drowsiness and high arterial tension and the urine contained indican in excess and skatol. Recovery was brought about by venesection, electric and hot air baths, hot packs, diet and alkaline therapy.

Browning of London has incorporated in his routine the examination of feces and urine in all cases of ocular disease in which the cause is not immediately obvious; and this I may say is my own practice. Browning goes far in his studies of this subject. He lays much stress upon the value of autogenous vaccines in terminating these toxic processes in the intestines and plates out his feces and urine specimens on Conradi-Drigalski nutrose-agar for proper study and identification of the various types of bacteria present. When, for example, abnormal types of B. Coli are noted, Browning takes the opsonic index for this organism or makes agglutination tests to determine the pathogenicity. In this connection, two cases reported by Lawson are of interest. They were cases of peculiar corneal disease and were cured by vaccines made from organisms recovered from the urine, a cystitis being present.

---

*Presented to the Fulton County Medical Society, October 5, 1915.

Amongst the less frequently recognized eye conditions secondary to general disease might be mentioned a case of Lodge's. This was a case of vasomotor disturbance of the Reynaud type and showed markedly contracted temporal fields. Bull has reported cases of pyemia complicated by emboli in the retinal and choroidal vessels and of pneumonia showing metastatic choroiditis. Baas reports a cirrhosis of the choroid, considered by him to be due to the same conditions which caused a co-existent liver disease. A choroiditis due to inhalation of bisulphide of carbon is mentioned by de Schweinitz, certainly a very unusual occurrence, as we rather expect optic nerve involvement in the drug and chemical intoxications.

We are familiar with the rapid and often serious results of poisoning by shell fish, tainted meat, etc., but do we realize that not infrequently exactly the same tox-albumins are found in the lower bowel from the undigested excess proteids or because of special bacterial conditions? The more spectacular effect of ptomaine poisoning is made possible by the very rapid absorption which takes place in the stomach and small intestines, while similar toxins elaborated chiefly in the large bowel are very slowly absorbed. Some of the eye signs in the ptomaine type of poisoning are mydriasis, disturbances of accommodation and paralysis of the extraocular muscles, while Bull has described a case of this kind having yellow-white choroidal exudates and chorioretinitis.

Young was one of the first in America to report toxic amblyopia cases due to intestinal disturbances. Several of his cases became absolutely blind with dilated immobile pupils but no fundus changes. All color sense was lost in those cases where some vision remained. These cases all regained normal vision following thorough intestinal eliminative measures. Elschnig in addition to his reported cases of eye disease due to various alimentary disturbances, considers the presence of intestinal toxins to be an important factor in sympathetic ophthalmia.

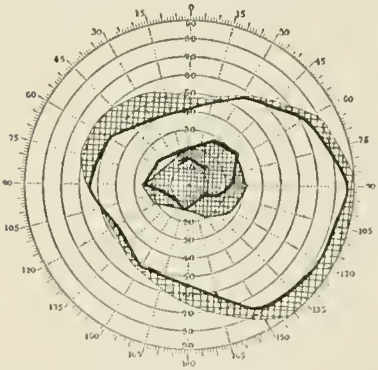
Transitory episcleral congestion in the form of hyperemia localized at a particular spot or patch, frequently coming on suddenly and accompanied by a sensation of heat with itching is usually to be attributed to some form of general intoxication, such as gout. This symptom may be the only evidence of a masked toxemia which later might cause retinal or other hemorrhages. We are all familiar with the fact that retinitis and retinal hemorrhages are indicative of some form of Bright's disease, and indeed when considered together with subconjunctival hemorrhages of spontaneous origin are often the earliest evidences of this disease, occurring even during the period now recognized as the cardio-vascular stage before albumen or casts are found in the urine.

There are certain changes in the retinal vessels which may be seen with the ophthalmoscope which furnish evidence of general vascular disease. The most important of these are the alterations in the light reflex from the retinal vessels and variations in their translucency. Where a vein crosses an artery which is undergoing hyaline degeneration of its coats, thickening of its intima or connective tissue changes in its adventitia, the vein seems to hook over the artery instead of maintaining an apparently straight course. The vein may also seem to widen just before and after crossing the artery. Again where the artery is uppermost the vein appears to narrow as it passes underneath and widens to its normal caliber beyond the artery. Such arteries frequently show bordering white lines where the blood can no longer be seen through the thickened opaque walls. Alternate constriction and widening giving a bead-like effect is also noted, with small hemorrhages, or scattered areas of retinal haze or edema.

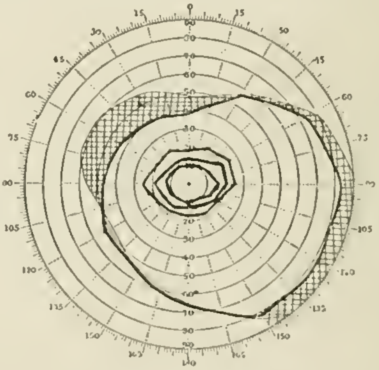
The cases presented in the accompanying reports are all types met with in our daily practice, and it is with the hope that some light may be thrown upon some of our baffling problems and further study encouraged that these reports are offered. Though far from being as complete and as thoroughly worked out as could be desired, they may yet serve a purpose.

Case 1. *W. F.* Aged 10. Under observation for ten years.

History and Eye Findings: First trouble was a muscular imbalance and refractive anomaly corrected by glasses and orthoptic exercises. L. V. 20/30; R. V. 20/30. Seen again September 2, 1910. Refraction practically unchanged. L. V. 20/20; R. V. 20/20 Similar findings were recorded November 29, 1911. October 2, 1912, reported that since September 24, 1912, had noticed blurred vision with R. E. No pain or other eye symptoms. September 30, 1912, had temperature 102° F. and chills. The tongue was heavily coated and toothmarked. Tension R. E. minus and some pain on motion. R. V. 20/200. Fundus R. was pronounced normal by four ophthalmologists. The nasal sinuses were negative. Smokes very moderately; no alcohol or drugs. The field of vision for the left eye was normal while that for the right eye showed hazy central vision but no absolute scotoma. October 3, 1912, was sent to hospital where he was treated by an internist with dietetic and eliminative measures, sweats, etc. The vision improved steadily and was 20/20 R. E. October 21, 1912. The field of vision November 20, 1912, was practically normal.



Field of Oct. 2, 1912.



Field of Nov. 20, 1912.

February 17, 1913, Dr. Claiborne of New York saw the patient and found that R. E. = 20/20, and March 11, R. E. = 20/30, March 12, 20/50. He returned for treatment March 14, 1913, when R. E. = 20/50 improved to 20/30 four days later after similar general treatment. April 11, 1913, after some type of intestinal disturbance the R. E. = 20/30 returning to normal after treatment of systemic condition as before.

February 3, 1914, had an attack of acute otitis media in the right ear, following violent blowing of nose during an acute coryza. This was followed by a furuncle of the external auditory meatus. After incising the membrana tympani and the meatal furuncle ear healed rapidly. Vision in each eye 20/20 at this time.

April 5, 1915, had another attack of gastrointestinal disturbance and vision reduced to 20/50 left and 20/100 right. Fields of vision remained unaffected except that object in central field seemed darker than in peripheral field. August 2, 1915, L. V. 20/40. Gait ataxic. Said by a consultant to have a cerebellar abscess, supposed to have been caused from the one short attack of otitis media a year and a half previously. All ear tests proved normal and another general examination showed exaggerated reflexes; no Babinski or sensory disturbance. Stool showed much undigested food detritus, bacteria in excess and increased fermentation. Chest was normal in X-ray studies. The bismuth massed in the cecum partly filling the appendix which was tender. Blood Wassermann was negative but the spinal fluid showed a positive Nonné, positive Lange colloidal gold test and positive Wassermann, the fluid coming out under distinct pressure. The urine showed a few hyaline casts, a trace of albumen and an enormous excess of indican. Treatment directed to the luetic condition as well as the intestinal disturbance has brought on marked improvement. September 30, 1915, L. V. = 20/20. R. V. = 20/50 and tests of the labyrinth were normal.

Case 2. *A. E. H., Jr.*, aged 9. First seen October 22, 1906.

Eye Condition: Asthenopia after use of eyes. L. V. 20/15—, R. V. 20/20. Under atropia L. E. 90° plus 0.25 plus 0.75 S. R. E. 90° plus 0.25 plus 1.00 S. This correction less plus 0.25 S. was ordered for reading with partial relief only. Patient abnormally stout and a very heavy eater. From time to time had attacks of burning and smarting of the eyes with tearing after school work. Maddox rod = orthophoria. Tangent scale = excess convergence, 6°-7°; abduction 5°; adduction 14°. Refraction remains unchanged.

October 16, 1913, complained of black spots before his eyes with frontal headache becoming general. The muscle tests varied greatly always showing, however, spasm of the interni.

A. E. H. General examination; report by Dr. M. M. Portis. Seen September 27, 1913. Has a general obesity which is suggestive of the thyroid type. Could not palpate any thyroid. Mentally he seems normal. The blood pressure measures

108 systolic and 90 diastolic. The stool shows a large amount of undigested meat fibers and bacteria in excess. The urine would not indicate a lack of thyroid, but I still feel that there is one. I could not get him to consent to a stomach test, hence I carried out the Desmoid test, which showed a complete absence of free hydrochloric acid at any time during the course of digestion.

It seems to me that he should not eat meat for a twofold reason—first, because he has not the type of stomach chemistry for its complete digestion, and secondly because of the probable thyroid element. I have placed him on a suitable diet and have incorporated in his medicine some thyroid extract.

October 27, 1913. The weight decreased from 200¼ to 191 and the hemoglobin increased three points. Patient reported much improvement. Besides the meat-free diet, he had thyroid extract in doses of one to two grains three times a day. From the clinical improvement in his case I feel convinced that subthyroidea was present in his case, in addition to the other things described.

Improvement has been uninterrupted and school work is now carried on without symptoms, while formerly patient complained constantly of asthenopic symptoms.

Case 3. *A. W. R.* Male, aged 26.

History: Left eye inflamed for five days when seen April 18, 1912, with severe pain at night and lowered vision.

Eye Findings and Treatment: Atropia 1%, homatropine 2% and dionin 5% used to secure dilatation of pupil, and atropia with hot fomentations every two hours. Diagnosis was iritis with posterior synechiae; tension —1. Nasal accessory sinuses negative; Wassermann negative and no suspicion of lues or luetic history; gonorrhoea one year before but no symptoms since; rheumatic pain right hip one month before present attack; general health said to be normal. Analysis of a 24-hour urine specimen: the chief points noted were the high degree of acidity, high ammonia nitrogen and excess indican. These conditions were corrected by diet low in proteids, excess water intake and alkaline laxatives. Pupil was dilated and remained so under the influence of alkaloid atropin and dionin powder. In twelve days, May 1, 1912, the eye was quiet and tension normal. Patient was advised to moderate his consumption of proteid foods and to take moderate exercise, preferably in the open, and to maintain elimination.

Case 5. *H. F.*, girl, aged 8.

History: First seen February 5, 1912. Had scarlet fever in December, 1911. Towards end of quarantine, nurse noted loss of vision, which was later confirmed by the school physician. The attending physician noted no evidence of kidney involvement during the illness.

Eye Findings: The fundi showed symmetrical areas of chorio-retinitis in the macular region of each eye. The retinal vessels at points were clearly seen running above the mass of exudate. When seen September 14, 1912, these macular lesions were seen as small dead-white areas surrounded by red roughened pigmented macular region.

February 5, 1912. L. V. 20/100. R. V. 20/70. Refraction under atropine. L. 90° plus 0.25 plus 1.50 S. R. plus 2.00 S. This was ordered less plus 0.50 S. for constant wear and with this correction September 14, 1912, L. V. 20/70—, R. V. 20/20—.

General examination; report by Dr. M. M. Portis: H. F. seen February 17, 1912, shows a secondary anemia of moderate grade and a catarrhal gastritis in which the total acidity is one-half the normal and a 24-hour specimen which was sent to me shows a small amount of albumin and an occasional hyaline granular cast. The rest of the findings of the urine correspond closely with those of Burdick's Laboratory which you sent me (a previous analysis for diagnosis). I have given her a suitable diet and an acid mixture to aid her digestion, and beside it a tonic. I do not think that there is any doubt that the child had a nephritis during her scarlet fever. The patient improved. A subsequent stomach test made April 18th showed normal findings and the hemoglobin in September, 1912, rose to 93. Clinically I consider the girl very much improved, gave her some liberties in diet and did not ask her to report in again.

Patient last seen June 25, 1914, suffering from a marked chorea. L. V. 20/20—3. R. V. 20/15—3. The macular picture had practically disappeared except a few points of pigmentation and atrophy.

Case 6. *K. C. H.* A young woman aged 31.

History: Gave a history of the usual asthenopic symptoms only.

Eye Findings: L. V. 20/20; R. V. 20/20. The left eye showed vitreous opacities few in number with choroidal exudates in lower periphery of fundus. Right fundus normal.

The refraction was a low degree of compound hyperopic astigmatism in both eyes. Pilocarpine sweats and K. I. were found to cause severe nausea and emesis. A 24-hour urine specimen was collected March 9, 1910. There were seven urinalyses made showing the improvement following diet and eliminative measures. A history of menorrhagia and excessive menstruation, enlarged palpable right lobe of the thyroid, fine tremor, pulse 88, excessive oxidation and excretion of nitrogen as shown in the urinalyses indicated a hyperthyroidism. . A diet low in proteids was ordered, eliminative measures, an alkaline mixture and Fowler's solution to inhibit thyroid secretion. The vitreous opacities entirely disappeared by May 4, 1910, and when last seen July 1, 1910, the left eye showed no pathology and L. V. = 20/20.

The general report, for which I am indebted to Dr. Arthur Elliott, follows:

The only clinical notes available in the case of Miss K. C. H. are under dates May 25, 1910, to July 11, 1910. Symptoms: Gastric discomfort, dull aching in abdomen in median line, right and left iliac regions. The discomfort appears shortly after breakfast and continues during day, invariably absent during night and before breakfast; eructations, belching and frequent vomiting. All these symptoms greatly aggravated during and about the menstrual periods. Much flushing and palpitation. Cough frequent, paroxysmal, and frankly recognized by patient as brought on by nervous causes (emotion, excitement, etc). Other symptoms occasional headaches and vertigo, dysmenorrhoea. Menses regular.

Previous History: Goitre at age of 12 (puberty) lasting six months. Anemia at 12.

Family history unimportant.

Physical Findings: Hysterical stigmata. Exaggerated reflexes. Tache cerebrale. Pulse 78. B. P. systolic 110 mm. diastolic 90 mm. Heart slightly enlarged. Heart tones clear. Lungs negative. Abdomen, deep tenderness along course of colon, especially over descending colon (distal end) and coecum. Slight increased mobility of right kidney. No epigastric tender point. Stomach distended with CO_2 reaches to one finger above umbilicus. Pelvic examination not made.

I regard the case as one of dyspepsia nervosa in an hysterical woman with a certain element of catarrhal colitis. On some suggestions for her diet after Van Noorden's plan, simple tonics and reassurance she improved, gaining 6 lbs. in weight while under observation.

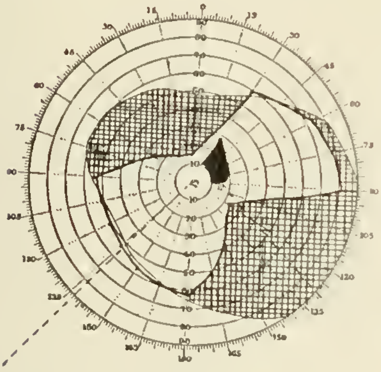
Case 7. *C. E. H.* A young man, aged 25, presented himself for examination September 15, 1906.

History: He had never experienced eye symptoms of any kind until a week before this date, when he noticed spots and a string-like object before his right eye. There was some photophobia.

Eye Findings: The right eye showed markedly injected conjunctival vessels in the inter-palpebral area, hazy cornea, shallow anterior chamber and tension plus 1. R. V. 20/50—. Evidently a glaucoma secondary to the uveitis was present. Fundus was not clearly seen but no gross lesions were evident. He gave a history of chronic constipation and also chancre 5 years before. Did not do well with eserine, but with K. I. and pilocarpine sweats and dionin 5% and later 100%, the tension became minus, when atropia was used. A subconjunctival injection of iodine 1-3000 and K. I. 1-1000, three drops, was followed by normal tension in 24 hours. October 15, 1906, R. V. = 20/40 plus 3. Various courses of mercurials were administered during the ensuing year and on October 9, 1907, with correction of a mixed astigmatism in each eye L. V. = 20/15—, R. V. =20/20. Complained of blurring and vertigo. Very few vitreous opacities seen. R. E. February 15, 1911, area of chorio-retinitic atrophy 1-3 o'clock.

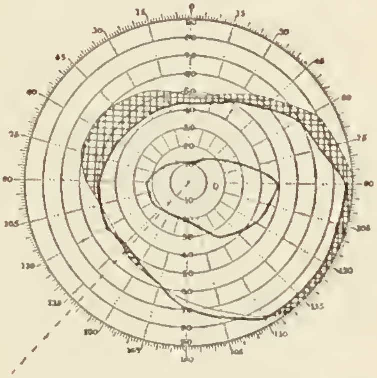
5 m.m.
White.

Nov. 6, 1912.
Poor light.
C. E. H.
RIGHT



Positive Scotoma.
Fixation point blurs.

5 m.m. Red and white.
Mar. 11, 1914.
Good light.
C. E. H.
RIGHT.



Fixation point blurs.

First Wassermann faintly positive February 15, 1911. October 12, 1912, second Wassermann was found negative. At this time nose was also negative, although had been having a severe rhinitis. Vision was hazy. A papillitis was found in the right eye with cotton-wool disc, dilated vessels and edema of adjacent retina. R. V. 20/40—.

Unfortunately a field of vision was not taken until November 6, 1912.

January 9, 1913, R. V. with correction 20/20 plus; process quiet; traces of papillitis still present.

General Examination: C. E. H., seen October 15, 1912, shows the following: Slight enlargement of the heart with no murmurs; blood pressure 120 systolic, 80 diastolic; reflexes normal. The stomach test shows a hyperchlorhydria, the total acid measuring 80; occult blood negative. The stool test shows an excessive fermentation and a large amount of mucus. The Weber test was positive. The blood shows a secondary anemia of moderate grade. As you observe from the stomach and urine picture there is a distinct picture of acidosis. I am suspicious that H. has a duodenal ulcer, but will decide this point definitely by the findings of the next test, for he will then be on a meat free diet and the significance of the Weber test of the stool will be more definite. I have given him a diet and alkaline control and also have given him Bulgarian bacillus tablets.

H. showed marked improvement during the time that he was under observation, as far as his general condition is concerned. The last stomach analysis showed only a slight hyperchlorhydria and the Weber test on the stool was negative. The duodenal ulcer that he presented at first has healed.

Case 8. *Miss M. V.* Aged 35. First seen December 17, 1909.

History: She gave a history of myopia since school days. The left eye failed four years before and sees spot before this eye constantly.

Eye Findings: L. V. 20/40—; R. V. 20/20. The left vitreous was hazy with a few filament-opacities and no gross fundus lesions. The right vitreous showed one filament opacity.

Nasal Findings: There was a left frontal sinus infection combined with infection of the anterior ethmoidal cells as demonstrated by means of the author's suction apparatus. Nasal discharge had been present for about a year. The anterior third of the left middle turbinal was removed and irrigation of the frontal sinus was instituted combined with suction. The operation was performed December 21, 1909, and the cells were free from secretion February 2, 1910.

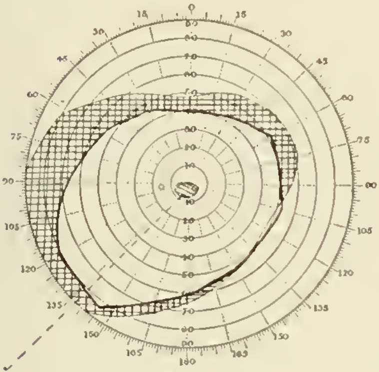
There was no improvement noted in the ocular condition.

Treatment: The usual treatment of a uveitis was instituted June 28, 1910, the delay being due to absence of the patient in the south. Atropia and dionin were used locally and pilocarpine sweats, salicylates, colonic flushings, low proteid diet, etc., were instituted following the examination of a 24-hour urine collection.

A Wassermann test by one laboratory was positive and mercurials and K. I. were started but were continued only two weeks as patient was made very ill. Subsequently four separate Wassermann tests were made and each was found negative by a particularly competent observer. The nose was examined from time to time but no further sinus disease found.

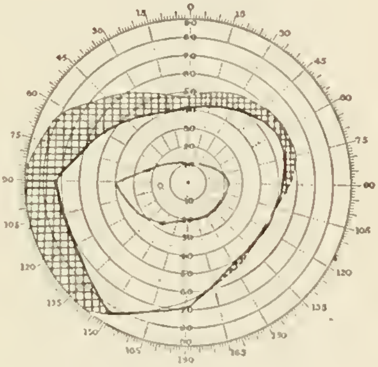
5 m.m. White.
Feb. 2, 1910.
Moderately dull day.
M. V.

LEFT.



5 m.m. Red and white.
Mar. 11, 1914.
Good light.
M. V.

LEFT.



June 17, 1912, the patient was sent to Dr. M. Milton Portis for an exhaustive general examination with the following result.

Miss M. V. examined June 22, 1912, shows the following: Moderate enlargement of the heart (apex 8 cm. to the left of the median line, right border 1 cm. to the right of the sternum). No murmurs are present and the action slightly irregular. Blood pressure measures 121. She has a slight secondary anemia. The stomach test shows a catarrhal gastritis with a total acidity of 48. The ferments are present in normal amount. The urine in detail:

Total amount—960 cc.
Specific gravity—1018.
Total solids—28.7 gms.
Acidity—36 degrees.
Urea—1.2%.
Total urea—11.5 gms.
Albumen—Absent.
Indican—Moderate amount.
Diacetic acid—Absent.
Ammonia—1.66.
Microscopically negative.

The heart condition I consider a chronic myocarditis with a possible endocardial lesion which is not evident at present. The rest of the picture is one of a moderate acidosis. I advised her strongly, besides following the diet and medication, to take a vacation for a few weeks.

A second stomach test was made on August 2, 1912, which showed the same findings as June 22nd, except for a decrease in the amount of mucus and an increase in the total acid to 50. Her hemoglobin increased on November 5th to 92. The stool picture, which at first showed a large amount of undigested meat fiber and increased fermentation in June, later showed normal findings.

The last analysis of Miss M. V., March 20, 1914, shows a normal stomach picture. The stool picture presents a large amount of undigested food detritus and a marked amount of fermentation. I have asked her to return to a diet and elimination, which I hope will help to improve her condition.

Last examination of the eyes was on March 11, 1914.

The left eye shows clear vitreous, the right still shows the original vitreous filament. The choroidal reflex is a deep red in each eye. With correction of her myopia L. V. 20/50, R. V. 20/15—.

CONCLUSIONS.

To review briefly the points presented in these cases, it would seem that we have at our command a very valuable weapon in these studies of metabolism. Unfortunately the internists who have proper laboratory facilities and who are properly trained for this work are few in number as yet, and exist at present chiefly among the specialists. The expense of the laboratory work alone is a large item, and when to this is added the fees of two specialists, the oculist and the internist, it is easily seen that such care is beyond the means of many patients. For these, the well equippd hospital offers a solution of the problem and incidentally a means for extending our researches along these lines. It is understood, of course, that the examination of these unusual eye cases includes a thorough study of the accessory nasal sinuses, tonsils, teeth, urinary tract, glandular system, etc., in order to exclude all possible sources of toxemia.

It does not seem possible that we shall ever be able to point to a given ocular lesion and state definitely that a certain toxin is the etiologic factor. This would seem to be as impossible as it would to account for the variety of skin areas involved in an eczema, a disease now believed to be chiefly the result of a general toxic process, or to account for the occurrence of a neuritis, or a so-called rheumatism in so many different locations. It is as rational a thing I believe to correct faults of metabolism in every individual whether ill or well, as it is to periodically overhaul your automobile, or to see that proper fuel and oil are provided. And certainly in the presence of disease in any part of the body the obvious course is to place that body in the highest state of efficiency and resistance by balancing up the processes of metabolism.

RECENT LITERATURE ON THE RELATIONS OF GENERAL DISEASES TO OPHTHALMOLOGY.

BY
CHARLES P. SMALL, M. D.
CHICAGO.

It is a well recognized fact that there exists an intimate relationship between certain systemic and ocular diseases. Many eye diseases and symptoms are but local expressions of general pathologic processes; hence the need for investigating the general condition of the patient when the etiology is not absolutely clear. Search for tubercular, rheumatic, syphilitic, or neurologic manifestations will be in order. Often laboratory tests, such as examinations of the blood, spinal fluid, feces, spermatic juices and urine will give valuable data. The teeth, fauces, pharynx and nasal cavities should be carefully inspected. The various reaction tests for syphilis, tuberculosis, gonorrhoea, malaria, etc., are often required. As a rule, the reference of the patient to an internist fully alive to the various needs of the ophthalmologist will be the most effective method of dealing with these matters.

Among the various forms of systemic disease which have been held responsible for subsequent ocular disturbances, interesting and instructive instances have been reported recently by different observers.

Butler (*Ophthalmoscope,* IX, p. 95, 1912) reports four cases in which he believes that infection with the *diphtheria* bacillus caused severe ocular inflammation bearing no clinical resemblance to the ordinary type of diphtheretic ophthalmia. In one case there were general edema of the lids, chemosis, slight proptosis, and swelling over the lachrymal gland. The swelling was incised and the pus, which did not appear until four days later, contained Klebs-Loeffler bacilli. The second patient had a whitlow, and some days later, conjunctivitis, with the usual characteristics of ocular diphtheria; chemosis, edema, and pustular eczema of the lids. Instead of staphylococci which were expected, Klebs-Loeffler bacilli were found. In the third and fourth cases severe post-operative infections, without formation of false membrane, were due to the same bacillus.

Anargyros (*Ophthalmology,* Vol. VIII, p. 361, 1912) observed cases of abducens paralysis and inflammations of the conjunctiva and cornea as complications of *cerebro-spinal meningitis.* Local instillations of the serum exerted a favorable influence, and Anargyros regards the specific treatment as the most important. He believes that its early, local application may prevent ocular complications.

Anthrax is usually fatal before secondary complications can arise. Hence the eye is involved chiefly when the primary lesion is situated on the lids. In a few cases, however, secondary extensions have given rise to panophthalmitis, gangrene of the lids and phlebitis involving the ophthalmic veins. Verderame (*Klin. Monstabl. f. Augenheil.,* p. 232, Aug., 1911) reports a case of this kind. Cases of acute iritis and iridocyclitis, which have been classed as "rheumatic," are in many instances of *gonorrhoeal* origin. Cobbledick (*Ophthalmoscope,* Dec., 1912) believes that the gonococcus is by far the most common cause of *acute* iridocyclitis. Byers, from the pathological examination of an eye with gonorrhoeal iridocyclitis, concludes that the inflammation is the result of a toxin. If this is so, it should be feasible to prevent recurrences by curing the urethral discharge. The presence of gonococci in the urethra and its diverticula is so constant in these cases of iridocyclitis, it must be looked upon as the cause. Sidler-Huguenin (*Archiv. f. Ophthal.,* 69, p. 346, 1912) reports fourteen cases of metastatic ophthalmia after gonorrhoea, twelve of which were undoubtedly due to the gonococcus. In five of these patients gonococci were found in the blood, and in six pure cultures were obtained from the aqueous humor. There were nine cases of metastatic iridocyclitis, and three of bilateral metastatic conjunctivitis. Rollet and Aurand (Révue Générale d'Ophtal., 31, p. 97, 1912) have experimented on the rabbit by inoculation with culture of the gonococcus, or with the gonotoxin. The organism inoculated into the anterior chamber, iris, or vitreous, produced severe plastic iritis which ran its course to recovery in from three to five weeks. In the choroid the resulting inflammation was less severe, and inoculation of the ciliary body proved negative in two cases. Inoculation of the optic nerve sheath caused optic neuritis, and subsequent atrophy. Introduction of the gonotoxin into the anterior chamber or vitreous produced plastic iritis; and in the optic nerve sheath, an optic neuritis with subsequent retinal degeneration. In the subconjunctival and superchoroidal spaces it caused no disturbance. They conclude that in the rabbit gonorrhoeal infection causes a poisoning of the retinal neuro-epithelium.

The possible relationship between cataract and *disturbances of internal secretion* is considered by Schiötz (*Norsk. Mag. for Laegevid.,* p. 1201, 1913) who observes that various authors have reported the occurrence of cataract in association with lowered activity of the parathyroid, pancreatic and sexual glands, and that others have noted lens opacities in connection with hypersecretion of those glands whose acivity is commonly regarded as balancing that of the first group, namely, the suprarenals, the thyroid and the hypophysis.

Intestinal toxemia was considered the cause of a retrobulbar neuritis in a case reported by Frank Allport (*Ophth. Record,* Dec., 1912). Treatment by pilocarpin sweats, diet, and bowel flushings, etc., produced rapid improvement. Vision in this case which was reduced to 20/200 at first, increased to 20/30 in ten days, and finally to 20/20 and a perfect perimeter chart.

Now that it is becoming more generally recognized that toxemia from the alimentary tract and from the genito-urinary system may cause certain eye diseases, the necessity for a more general routine examination of the feces and urine, is apparent. Browning (*Ophthalmic Review*, Apr., 1913) thus describes his method of making this examination: "If convenient, the patient is put into a nursing home for the day. A catheter specimen of urine is drawn off into a sterile bottle for future examination, then a small portion of freshly passed feces is taken up with a sterile spoon fastened into the cork of a small wide mouthed bottle and conveyed to the sterile bottle and firmly corked. The feces should be passed without the aid of an aperient. In the laboratory a loopful of the feces is rubbed up with some sterile broth and one or two loopfuls are plated out on Conradi-Drigalski nutrose agar (Eyre's modification). This medium allows the various organisms to be readily identified, and what is most important, allows the relative number of each organism to be noted. Sometimes it is very easy to see that the feces are abnormal, as the plates may show practically a pure culture of pneumococcus or streptococcus with just a few colonies of the normal Bacillus coli; at other times the number of colonies of the different organisms has to be counted and the ratio, one to another, compared with the ratio in normal feces, before any decision can be arrived at. Then again there may be abnormal types of Bacillus coli present, and then one has to estimate the patient's opsonic index or the agglutination power of his blood serum before it can be decided that the organism is pathogenic or no.

If it is decided that the patient is suffering from an infection by one or more of these organisms a vaccine is prepared and used while the general intestinal toilet is looked after. In some of these cases the result of vaccine treatment has been striking, while in others it has been quite disappointing, but the results are sufficiently good to make it advisable to examine the feces in all difficult cases.

A thorough examination of the urine is made at the same time; the routine chemical tests are made, and then one loopful of the fresh urine is planted on to agar and human blood agar. A portion of the urine is then centrifuged and some of the deposit is plated and some is examined in the fresh state under the microscope. It is naturally much easier to detect the presence of bacterial infection in the urine than in the feces, and the results by autogenous vaccines have been successful in several cases.

The proof that the eye condition is caused by the intestinal or urinary infection is the cure of the eye disease at the same time as the other more general condition. This can be most readily brought about by the use of a suitable *autogenous* vaccine."

De Schweinitz (*Section on Ophth., Seventeenth Internat. Cong. of Med.*, London, Aug. 10, 1913) concludes that there is absolutely no proof that any toxic substance elaborated within the tissues in the course of a so-called gastro-intestinal auto-intoxication, has of itself by its toxic properties, produced a uveitis.

There is, however, satisfactory evidence, clinical and bacteriologic, that the majority of cases of *uveitis* (iridocyclitis) are caused by micro-organisms, or their toxins.

Chronic insidious uveitis, especially as it occurs in women, who are often anemic, is in all probability most frequently excited by bacteria or bacterial toxins which have come from foci of chronic sepsis, particularly in the mouth, tonsils, sinuses, pelvis and the gastro-intestinal tract.

Lang (*Brit. Med. Jour.*, Feb. 22, 1913) regards the cause of many cases of scleritis, iritis, cyclitis, and choroiditis, to be *the chemical effects of bacteria or other toxins;* the septic foci occurring along the respirato-alimentary tract; along the genito-urinary tract; on the skin or in a sinus leading from it. The views of the writer are based upon an analysis of 176 cases.

Dental disease has apparently been the causal agent of certain eye diseases. Posey (*Ophth. Rec.*, V. 23, p. 587, 1914) reported a case of monocular retrobulbar neuritis following an automobile ride in a sharp wind, and was thought to be due to periosteal inflammation emanating from some teeth which had been broken and crowned. In a second case, a detachment of the retina was regarded as having resulted from a long standing root abscess on the same side. But removal of the tooth did not relieve the eye condition. A case of choroiditis and one of iridocyclitis, recorded by Tibbles (*Brit. Med. Jour.*, Apr. 4, 1913) were checked by attention to the *pyorrhea alveolaris* which was present in each patient. A painful condition in the left side of the neck and left arm, which had been diagnosed as neuritis, was reported by Crisp (*Colo. Ophth. Soc.*, Apr. 18, 1913). The symptoms disappeared shortly after the opening of a tiny abscess at the root of a crowned left upper molar tooth.

Arteriosclerosis often manifests itself first in the eye; this condition is most typically seen in albuminuric retinitis of a degenerative form, presenting an ophthalmoscopic picture of thickened tortuous arteries, strapping of the veins, hemorrhages, exudations, degenerations, etc., all of which point to a degeneration of the retinal vessels. Elsworth Smith (*Interstate Med. Jour.*, Jan., 1914) believes that if general vascular sclerosis can be responsible for retinitis, that it might also be responsible for an inflammatory process in the choroid. In subjects of general arteriosclerosis, hemorrhages into the vitreous may follow ruptures of the vessels of the retina and choroid. As a rule they are not entirely absorbed, but leave fixed or floating opacities. Smith suggests the probability of a relation between arteriosclerosis and glaucoma.

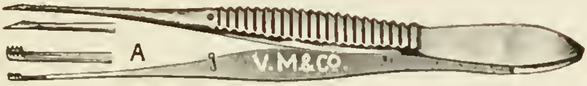
AN OPERATION FOR SECONDARY CATARACT.

BY
A. S. GREEN, M. D.
L. D. GREEN, M. D.
SAN FRANCISCO.

The usual method of dealing with secondary cataract is to make an opening in the occluding membrane with a discission needle, knife or scissors. These are more or less successful, depending upon the skill of the operator and toughness of the membrane. Very often, despite repeated attempts, the opening will close up by a valve-like action of the flap. Each effort at discission subjects the eye to the dangers from infection and glaucoma to practically the same degree as the primary cataract operation. The retained membrane by contraction in the course of scar tissue formation is liable to produce a low grade irido-cyclitis or detachment of the retina.

The comparative freedom from post-operative complications following the intracapsular cataract operation has led Col. Henry Smith, of India, to remove the remaining capsule in all cases of secondary cataracts that come to him. His method is to make an incision in the sclero-corneal margin as for an iridectomy. If there are adhesions between the iris and secondary cataract, these are separated with a flat iris repositor. An iris forceps is now introduced into the anterior chamber and the blades pushed through the cataract. With first a side to side and then a back and forth motion the after cataract is withdrawn. The result usually is a clear, black pupil. A drop or two of vitreous is always lost, but this is of little consequence. If the entire membrane is not extracted, enough at least is removed to insure a permanent opening, and in either event does away with subsequent discissions.

The only objection that could be urged against the operation is that where the after cataract was a dense membrane, it required a great deal of force to penetrate with iris forceps. To overcome this the writers devised the instrument shown in the cut. One blade of the forceps is a knife needle, while the other is a grooved and toothed forceps blade. The closed blades are introduced within the anterior chamber with the needle portion down. The needle is then pushed through the membrane and the upper blade closed down upon it and with the side to side, and back and forth motion the membrane is gently withdrawn.



Knife-Needle Forceps for Secondary Cataract.

Atropine ointment is put into the cul-de-sac and both eyes bandaged for five days.

CONGENITAL APHAKIA WITH MICRO-CORNEA.

BY

ELDRIDGE ADAMS, A. B., M. D.,

CHICAGO.

In view of the recent discussion as to the existence of congenital aphakia (Hardy, OPHTHALMIC RECORD, July, 1915). a report of the following case may be of interest.

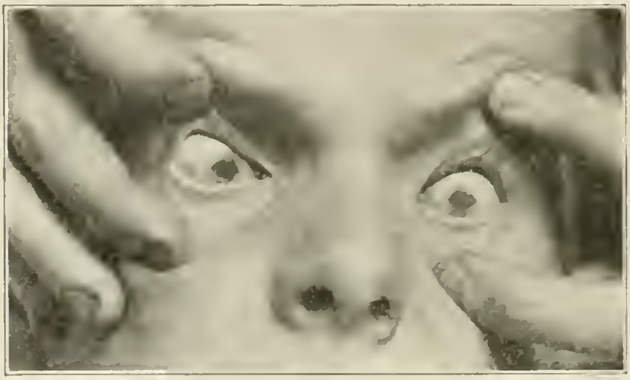
W. M. L., age 19, a farmer, came to the office July 13, for the removal of a foreign body, which he said, had been in the left eye for a month. A small foreign body was removed from the left cornea without incident.

The patient is a white male, 19 years old, and of Finnish descent. He is the eldest of nine children, none of the others having any ocular defects. The parents are living and well and free from any ocular troubles. At no time has the patient been sick, and this is the first time he has ever consulted a physician. He has never worn glasses although his eyes have always troubled him. At the age of fifteen, he reached the fifth grade of school, and then ceased to attend. He has had to hold objects at about six inches for near vision.

Examination shows: R. 20/200, L. 17/200. Near; newspaper at eight inches.

There is a convergent, alternating, concomitant, strabismus, of about thirty degrees. The diameter of the palpebral fissure is about nine millimeters. The cornea has the oval shape shown in the accompanying photograph. as the conjunctiva overlaps the cornea to the extent shown. Through the conjunctiva, the iris can be seen. It is apparently normal. In the centre of each cornea there is a symmetrical, circular, nebular, opacity, three millimeters in diameter. The curvature of the cornea is normal.

On examining for the Sanson-Purkinjé images only one image (that formed by the cornea) could be seen.



Micro-cornea, showing Oval Clear Cornea and area of Conjunctival Encroachment.

Opthalmoscopic examination shows a normal fundus in each eye, except that the apparent diameter of the disc and vessels is much reduced. Retinoscopy is impossible, owing to the corneal opacities. Under homatropine, the patient accepts

R. Sp. + 10.00 = Cyl. + 2.50 ax. 90°
L. Sp. + 9.00 = Cyl. + 1.50 ax. 90°

which gives a vision of 20/100 in each eye. An additional + 2.00 D. for near vision allows of reading at fourteen inches.

According to a report of the U. S. Public Health Service, about 69 per cent of the workers in the garment making industry in New York have defective vision and only 2.35 per cent have glasses fully correcting the defects.

REPORTS OF SOCIETIES

ROYAL SOCIETY OF MEDICINE.
SECTION OF OPHTHALMOLOGY.
PRIESTLEY SMITH, F. R. C. S., PRESIDENT.
June 9th, 1915.

Mr. A. C. Hudson showed a case of sympathetic ophthalmitis treated by salvarsan and neo-salvarsan. It was regarded as an undoubted case of the condition, and seemed a genuine cure.

Mr. J. S. Hosford exhibited two cases of the albuminuric retinitis of pregnancy; Dr. Attlee, coloboma of the iris in mother and child; Mr. Charles Wray a case of boney growth in the frontal sinus. In cases of retro-bulbar neuritis suspected to be of sphenoidal origin, he advocated making the patient spend some time with the face downwards, with a view to facilitating drainage from the sphenoidal and posterior ethmoidal cells. Mr. W. T. Holmes Spicer discussed the case.

Mr. J. Herbert Fisher read a paper on "Retinitis of Pregnancy." He had not included in the title the term "albuminuric," as he wished to lead his hearers away from the idea that the acute retinal changes were the results of the kidney disorder. Obstetricians now no longer explained the albuminuria of pregnancy as the result of obscure reflex effects of the gravid uterus upon the kidneys, or by mechanical pressure on the ureters. They attributed it, with eclampsia, and pathological vomiting of pregnancy, to toxaemic products in the circulation. Eclampsia could not be predicated by any examination of the urine; the effects were especially seen in the quality of the blood and in the blood vessel walls. In fatal cases of eclampsia, hemorrhages of brain and necrotic changes in the liver were often found, and albuminuria was an effect of the disease on the kidney, not the cause. In the retinitis of pregnancy, the condition of retina was different from that in albuminuric retinitis; as also was its sequel. Syncyto-toxins—products of the disintegration of the syncytium cells—had been found in these cases; and these cells immediately connected the foetal with the maternal structures. The author proceeded to give particulars of a series of typical cases of the condition which had been under his care. In one fatal case, Mr. A. C. Hudson made a pathological examination, on the day after death, and found the coats of the eye *in situ*. There was some oedema of the nerve head, and in the nasal quadrant of the retina were two large hemorrhages. The microscope showed the sclera and nerve sheaths to be normal, the chief pathological changes being in the large choroidal arteries, many of which showed gross endarteritis, causing, in some instances, obliteration of the vessel lumen. Some of the choroidal arteries were normal. Similar pathological changes were found in sections of posterior ciliary arteries surrounding the optic nerve behind the eyeball. Bruchs' membrane was everywhere intact, and the retinal pigment normal. The retina and optic nerve head showed evidence of oedema, in the former almost limited to the internuclear layer. Rods and cones were almost entirely absent, but this may be attributable to *post-mortem* changes. In the large retinal veins there was pronounced thickening of the adventitial coat. He had found it difficult to group his cases. The rule had been for good recovery of vision to ensue, with the disappearance of all acute manifestations in the retina, thus differing absolutely from cases of ordinary renal retinitis. In cases in which defects of vision were permanent, this seemed to have been because changes had been produced in the walls of the arteries, or an atrophic condition of the nerve. A recurrence of the retinitis was not necessarily seen when subsequent pregnancies occurred, even though the albumen did not quite disappear in all. One of his cases died after an interval of six years, from cardiac failure; another after 8½ years, of cerebral hemorrhage into the left corpus striatum. In this case the kidneys were found to be of the typical red granular type. It seemed clear, from his cases, that albuminuria of pregnancy was not sufficient, alone, to set up the typical retinitis of pregnancy.

In the ensuing discussion, Mr. J. S. Hosford reported having carefully observed 16 cases during the last 15 years; only three of them were now alive. All but two ultimately developed a star-shaped spot on the macula, a sign which he regarded as of fatal omen. Many patients seemed to quite recover from the initial attack, but later had a relapse. In a series of 132 cases seen in Dr. Fenwick's wards, 81 were in females, 51 in males; the onset among single men and single women seemed to be about equal. Much of the renal trouble seen fairly late in life might have started, in females, in pregnancy. Only 3 of the 132 cases had myopic eyes. Since the Wassermann reaction was introduced, he had had all the cases he saw so tested, but none were syphilitic.

Mr. W. C. Rockliffe related a case in which retinitis occurred in the first pregnancy, but the defect of sight seemed to be quite recovered from after premature labour was induced. A subsequent pregnancy brought on a repetition, but though labour was again ended prematurely, sight became progressively worse, and ended in blindness. The patient died four years later, from heart failure.

Mr. J. B. Lawford alluded to the far-reaching effect of the toxaemia. In some of the author's cases, although there was no recrudescence of retinal change during subsequent pregnancies, yet toxic effects showed themselves at a later date, and eventuated fatally. It was a common belief that one of the safeguards in this condition was the avoidance of further pregnancies in the patient. In one case which he had under care over twenty years ago, the lady developed retinitis in her first pregnancy, and had great defect of sight. This disappeared after delivery, and, acting on the advice of her doctor and himself, she had no further pregnancies. Her sight remained good for a number of years, but ultimately she developed advanced changes in the retinal vessels, and succumbed to chronic nephritis. Another patient, older, developed the condition in her third pregnancy, and recovered. The advice to bear no more children was disregarded, and in her next pregnancy there was a great aggravation of her toxaemic condition, and she died of nephritis. He asked whether obstetricians were aware of the reason for the persistence of the toxic effects of the first attack, even though some subsequent pregnancies did not seem to be accompanied by the symptoms. There seemed to be need for a revision of the view as to the comparative innocuousness of the retinitis of pregnancy.

Mr. Leslie Paton regarded the paper as important as giving a broad view of a disease not apparently due to a microbial poison, but to a cyto-toxin; and he tentatively suggested that such conditions as the irido-cyclitis seen in women at the period of the climacteric would possibly be brought into the same category. The seriousness of the disease seemed to be directly proportional to the extent to which the vessels were injured at the time of the attack. One case, though presenting "silver-wire" arteries, remained still well, eight years after the attack. He was much interested in the statement of the author that subsequent pregnancies need not necessarily cause a recurrence of the retinitis, for it touched a matter on which advice was frequently asked.

CHICAGO OPHTHALMOLOGICAL SOCIETY.

Richard J. Tivnen, M. D., President.

May 17, 1915.

Seton Operation for Glaucoma.

Dr. Frank Brawley presented two clinical cases. The first case was a Seton operation for glaucoma.

This case was operated on May 4, the tension now being raised, the tonometer showing 59 mm. There had been no pain since the operation and the eye is quiet. The treatment consisted of atropin and salicylates, her own physician taking care of the diet and hygiene.

Mucocele of Frontal Sinus.

The second case shown by Dr. Brawley was one of proptosis of the globe downward and outward. There was a swelling over the forehead. On examination he found a hyperplastic ethmoiditis, no pus, and made the diagnosis of mucocele. When the sinus was opened no connection with the nose was found. Where the fronto-nasal duct should have been, there was found about two cm. of cancellous bone. The floor of the frontal sinus was necrotic. This was removed and the space thoroughly curetted and drained. The operation was performed on the 16th of April, practically a month ago. An interesting feature of the case consists in the fact that he was not conscious of any double vision up to the time of the operation, but the rapid restoration of the eye to its normal position produced a diplopia. At the present time the muscle balance is normal.

Dr. Good inquired if there was a large cavity when the mucocele was removed.

Dr. Brawley stated that there was a large cavity and that the floor of the frontal sinus was entirely removed. On examining the ethmoid region no break was found through it. July 1, 1915, patient showed complete healing, a small fistulous tract having been successfully closed with two applications of bismuth paste.

Symblepharon.

Dr. Clark Hawley presented the case of a young man who was making experiments with a test tube. There was an explosion and a large mass of material in the tube was thrown into the lower sulcus of the eye, producing a severe burning. This material had to be scraped away. After a time healing went on, leaving a symblepharon which extended up to the extent of the burn on the cornea. When the patient looked up the lower lid was carried up to the cornea. The aim was to relieve the symblepharon, which was removed three weeks ago in the hospital. It was very much like a pterygium extending over quite a large portion of the lower lid and a portion of the cornea. After dissecting off the pterygium from the cornea an incision was begun at the lower border upward and over the center of the eye-ball, carrying it well up on top of the eye-ball. Two stitches were placed in the conjunctiva before cutting it off. The part dissected off was about three mm. wide, and the dissection was carried to the nasal side of the eye-ball. Two or three stitches were then put in the lower portion of the flap as it was necessary to fasten it somewhere. That allowed a stretching of the conjunctival flap considerably and the lower lid is now entirely free from the cornea, with no symblepharon. Dr. Hawley stated that the next operation would probably be to try to restore the sulcus for the lower lid. At the present time the condition is very much improved, and the case was shown so that it may be shown later in the second stage.

Mr. Max Poser, Rochester, New York, spoke on the evolution of ophthalmic lenses, describing a new system of designating their powers. His remarks were illustrated by numerous stereopticon slides.

A vote of thanks was extended to Mr. Poser for his instructive lecture.

WILLS HOSPITAL OPHTHALMIC SOCIETY.

P. N. K. SCHWENK, M. D., *Chairman.*

MAY 4, 1915.

O'Connor Advancement.

Dr. Zentmayer presented a case of esotropia that had been corrected by advancing the external rectus, after the method of O'Connor. A tenotomy of the internus had been performed by another surgeon five years before, leaving a residual squint of fifteen degrees. When exhibited by Dr. Zentmayer, two weeks after his operation, there was an exophoria of eight degrees on the perimeter.

Burton Chance, to show the good effects of advancing the ocular muscles, exhibited a young man upon whom he had operated privately on March 17th, 1915. There had been a convergence of 30°. The steps of the operation were taken as exactly as possible like those described by O'Connor. The external rectus was advanced, and an incomplete tenotomy was made of the internal rectus. There was but moderate reaction; the conjunctival and scleral sutures were removed at the end of ten days. The area has since then become flat, though it remains vascular. The eyes are now quite parallel, and capable of free movement; while all accompanying symptoms of diplopia and asthenopia have been relieved.

Two Cases of Bilateral Violent Panophthalmitis.

Dr. Zentmayer said that, in view of the almost identical nature of the injuries received and the similar calamitous results, and because he thought it would be of considerable value to have an expression of opinion from surgeons whose experience in the treatment of panophthalmitis has been large, he had felt that the cases were of sufficient interest to report. He also stated that he was indebted to Dr. Posey for the privilege of reporting his case.

G. B. and D. H., coal miners, were admitted to the hospital on January 19, 1915, with the history that, while preparing a blast with a stick of dynamite, eleven days before, a premature explosion had occurred, striking both patients in both eyes, face and hands. They were treated in a local hospital until the time of their admission here. G. B., who was assigned to Dr. Posey, had had the left eye enucleated on the fourth day. About this time, the right eye began to swell and become painful. On the left side, the orbital tissues were greatly swollen and discolored. The conjunctiva was chemosed, and there was a profuse purulent discharge from the socket. There was a v-shaped piece torn from the inner third of the lid. On the right side, the orbital tissues were greatly swollen, the lids edematous and discolored, and the conjunctiva very edematous and protruding from between the lids. The cornea had sloughed, and there was a profuse purulent discharge exuding from the opening. Evidently an incision had been made through the globe before admission. Two days after admission, this eye was enucleated, and hot magnesium compresses were applied. Two days later, the swelling was less; and three weeks after enucleation, the patient was discharged.

D. H. was assigned to Dr. Zentmayer. In both eyes, there was an intense panophthalmitis, with great involvement of the orbital tissues. The inflammation, however, was less intense on the left side. Smears showed pneumococci and streptococci. No cultures were made. Two days after admission, a free incision was made through the right eyeball, giving immediate relief, and establishing free drainage. One week later, the globe was easily enucleated; and in the course of a few days, the swelling of the lids and orbital tissues had gone. The left eye was treated with ice-compresses and atropin; and later, when the swelling had subsided and the cornea was becoming staphylomatous, eserine and a roller bandage were ordered. The patient was discharged on February 2d, with the staphyloma flattened; and a small clear area of cornea gave hope that a future iridectomy might restore some vision, as there was l. p.

DISCUSSION.

Dr. Schwenk believed in early removal of the globe. He had performed many enucleations, in all stages of panophthalmitis, without any resulting meningitis.

Dr. Griscom spoke of a case that he had seen during his term as Resident Surgeon of the Wills Hospital, in which meningitis and death had followed the enucleation of an eye during the acute stage of panophthalmitis.

Dr. Posey said that he had frequently removed the eye in an acute state of panophthalmitis without seeing meningeal symptoms arise. He preferred to do this in traumatic cases in which the orbital tissues were at all injured. In panophthalmitis arising after cataract operations, he preferred to allow the inflammation to run its course before enucleating.

Dr. Risley said regarding the advisability of the enucleation of eyeballs in the acute stage of suppurative panophthalmitis, that some years ago he had removed such an eye. The convalescence was apparently normal, and the man returned to his home. But, a week later, he suffered an attack of meningitis, which proved fatal. This led to a study of the records of the hospital; but up to that time, no record could be found of any other case of intracranial involvement, and but few cases could be found in literature. As a rule, Dr. Risley does not hesitate to remove such an eye when the safety of the other eye demands it. He said, however, that he had presented to the Society, about a year before, a patient from whose eye a fragment of steel had been removed by the magnet, through a small scleral puncture. The injury and operation were followed by a rapid and violent panophthalmitis, and a general toxemia, with high temperature, threatening a fatal termination. The ball and orbital tissues were greatly swollen and very painful.

In this case, he did not think enucleation a justifiable procedure; but the ball was freely incised, evacuating large quantities of pus, the infecting agent being the pneumococcus.

Dr. Zentmayer said that the consensus of opinion at the present time favors either incision of the globe or evisceration of the sclera. It is true, however, he continued, that Randolph's experiments showed that there is no danger in enucleating in panophthalmitis; but these results failed to convince even Dr. Randolph, and he advocates incision. Dr. Zentmayer could not help feeling that there is greater danger of exciting meningitis by a spread of the infection through the lacerated orbital tissues after enucleation than by allowing the pus to drain anteriorly. The degree of involvement of the orbit, and possibly, also, the organism exciting the inflammation, should be considered in deciding for or against enucleation. So far as the danger of sympathetic inflammation is concerned, Dr. Zentmayer considered it to be slight in either case.

A Case of Injury to the Lid in Infancy.

Dr. Risley presented a patient, aged 32 years, illustrating the late results of an operation for the restoration of an upper eyelid after a laceration so extensive as to leave the eyeball exposed. When a small child, aged two years, the patient had entangled the curved point of a button-hook under the upper eyelid, far back toward the retrotarsal fold, two millimeters to the temporal side of the punctum. In the frantic effort to remove it, the entire thickness of the lid was penetrated by the hook; and the conjunctiva, cartilage and skin being torn through to the tarsal border, and the entire eyelid torn off to the outer canthus, where it was found hanging by a tag of skin and conjunctiva. The tarsal conjunctiva was in shreds. The tissues were carefully placed *in situ* and patiently stitched with fine sutures. Convalescence was uneventful. After the lapse of years, there was no notable deformity. The function of the lid was perfect in all respects, and only the most careful scrutiny revealed the presence of scar tissue. Dr. Risley said that the case was an illustration of the great repairative power of the tissues of childhood, and of the fact that patient effort may at times repair an apparently hopeless injury.

Dr. Chance remarked upon the rarity of lacerations by shoe button-hooks, a common household implement; and, because of the result obtained, praised Dr. Risley's patience in uniting the lacerated tissues in the case shown. This case recalled one in his own experience, in which the lids of one eye of a baby had been lacerated, and the other eye destroyed, by the spurs of a game chicken. The laceration healed without deformity.

Some Remarks on Operation for Restoration of the Socket.

Dr. Posey spoke of the details of the Maxwell operation for the cure of contracted socket as just exemplified by him in an operation on a case exhibiting this condition. He had had some experience with the Weeks and Wiener operations for cicatricial contraction of the socket, but preferred the Maxwell method as being simpler and surer in its results. He thought that the formation of the floor of the socket by the flap taken from the cheek, after the method of Maxwell, was most ingenious. The flap is well nourished, and there is but little danger of sloughing. Ectropion, which is seen for a week or more after the operation, disappears at the end of that time. Both the Weeks and the Wiener operation are more difficult to perform and the Wolff grafts not only contract, but also frequently slough, the ultimate results being often disappointing.

Dr. Zentmayer believed it to be a mistake to make a wide flap, as this increases the entropion; and as the upper incision of the flap is practically a straight line, the broader the flap the more curved the lower incision, and the greater the difficulty in coaptating the edges of the denuded area on the cheek. In many cases, the flap need be only wide enough to form the bottom of the cul-de-sac; as there is often some conjunctiva remaining in the orbit.

Dr. Chance spoke of the comparative simplicity of the Maxwell procedure, basing his view upon a single case of his own, and upon his observation of five or six cases of Dr. Zentmayer's. The descriptions given by Maxwell in the "Ophthalmic Review," of about 1903, as Dr. Chance recalled them, are, he said, perhaps less complicated than the details as given by Dr. Posey would seem to be. In Dr. Chance's own case, the condition, he said, is not as satisfactory as he could wish. Yet, because the lower lid had been drawn away back on the floor of the orbit, there is now a semblance of a lid, with sufficient sulcus to enable the woman to wear a small glass shell. He has not seen the operation for the defect of the upper lid, yet he has the hope of enlarging the socket by such an operation later.

The Results of Two Cases of Capsular Advancement.

Dr. Chance showed a case of the early results of a conjunctivo-capsular advancement in a young man whose left eye had been divergent and depressed, by reason of congenital absence or atresia of the internal and superior recti muscles, accompanied with partial ptosis and myopia, with distortions of the optic disc.

The operation consisted in the excision of a fold of conjunctival and capsular tissues, grasped between the curved jaws of a crutch-shaped forceps. An elliptical area, exposing the sclera, resulted. The surrounding tissues were then freely dissected, and the edges united by five sutures. A partial tenotomy of the external rectus was also done. The reaction was not great. The sutures were removed at the end of eight days. The immediate effects have been to bring the axis within the vertical. The caruncle is only slightly displaced.

This procedure was suggested by Dr. Chance for cosmetic purposes in cases of widely divergent globes, in which there is an absence of muscular tissues, prohibiting the practice of one or the other of the operations for advancement. This is the second time that Dr. Chance has performed this operation.

The first was in a woman whose internal rectus had been completely tenotomized in childhood, with consequent divergence. The patient was shown to the Society last autumn. The result continues to be most satisfactory.

In the case of the young man, a plan to advance the muscle several years ago failed, by reason of there being no internal rectus present, as disclosed by ordinary dissection. Dr. Chance intends to operate later, to relieve the ptosis, and to reduce the katatropia.

Dr. Risley congratulated Dr. Chance on the results of the ingenious and simple procedure that he had adopted. In one case of wide divergence following an effort, many years before, by a surgeon to correct a convergence, Dr. Risley had brought all of the deep tissues forward to the corneal limbus, in the grip of strong forceps, and inserted deeply placed sutures. The resulting cicatrix held the amblyopic eye well in parallelism with its fellow, and overcame the deformity of a wide divergence. This method had the disadvantage of a vertical ridge of tissue tangent to the corneal limbus, which required many weeks to disappear. In the method pursued by Dr. Chance, this was avoided.

J. Milton Griscom, M. D.,
Secretary.

COLORADO OPHTHALMOLOGICAL SOCIETY.

SPECIAL MEETING.

Pueblo, Colorado, May 22, 1915.

J. J. Pattee, M. D., Presiding.

(Concluded.)

On May 20, 1915, the vision had improved to 20/20 with correction. Dr. Thompson believed opacity of lens in this case to have been due to eye strain and Dr. Patterson agreed with him.

Choroidoretinitis.

Mr. J. V., age 28. Austrian, miner. Two brothers living and well. Four brothers and one sister died in infancy. Father and mother living and well, ages 65 and 53 respectively. Patient is moderate user of alcohol and tobacco. Wassermann and urine negative. In 1914 had gonnorrhoea. Knee jerks sluggish. Complains of impaired memory.

Four months ago vision failed suddenly. Right fundus shows less chronic change than left, especially in the region of the macula. Lesions in the left eye probably due to old process.

May 14, 1915, R. E. V. fingers at 4 feet. L. E. V. 20/200. May 22, 1915, R. E. V. 20/100. L. E. V. 20/200.

DISCUSSION. Dr. Neeper thought the lesions of specific nature.

Dr. Jackson did not believe that the vision could be improved.

Posterior Polar Cataract in Right Eye. Subluxation of Traumatic Cataract in Left Eye.

Mr. T. H., age 53. Blacksmith. Vision of right eye began to get bad one year ago and is now 20/50. There is posterior polar cataract with opacity extending from posterior central capsular region.

In 1905 the left eye was forcibly struck by a piece of hot iron, following which the vision gradually grew worse. There is an opaque lens dislocated downwards. Iris tremulous. Pupil reacts normally. Up to two years ago had had recurring attacks of inflammation, but since that time vision has apparently improved. No fundus change.

DISCUSSION. Dr. Jackson thought it best to extract the left lens. Dr. Friedman believed that as there is a cataractous process in the right eye that the left lens should be extracted.

Parenchymatous Keratitis.

N. J., age 14. Father apparently healthy but is subject to rheumatism. Denies specific history. Mother 49, has had epileptiform convulsions for 15 years. Six living children. Seven still born babies before this patient.

Patient was injured over left eye and to this has been ascribed his present eye trouble. For some months has had so-called growing pains.

April 20, 1914, R. E. V. 20/15. Left eye marked interstitial keratitis, iridocyclitis with bulging cornea. Wassermann on patient +++ and + on father. Mother placed on specific treatment and recovered.

Luetic Degeneration of the Right Eye.

Mr. E. R. H., age 40, American, laborer. Father died at 86. Mother insane 16 years and died at the age of 67. Patient married when 29 and has four children. The two older children have nystagmus and deficient vision, while the two younger are well and without defect. Wife's first pregnancy miscarried at fourth month, the two following pregnancies went to term, then a miscarriage at three months, again followed by two deliveries at term.

At the age of 18 the patient had nephritis. In 1901 had chancre which was untreated. Wassermann not made.

Vision of right eye began to decrease in 1898 (before appearance of sore on penis) and is at present absolutely blind. Pupil reacts consensually but not to direct stimulus. There is an opaque, luxated lens. Iris tremulous and of lighter color than that of fellow eye. The lens can be dislocated into the anterior or vitreous chambers. Marked exotropia since dislocation of the lens took place two years ago. Fundus shows choroidoretinitis.

Dr. J. J. Pattee of Pueblo presented three patients, showing the following conditions:

Retinal Detachment.

Mr. N. C., age 27. Steel worker.

Sixteen months ago noticed that the vision of left eye was greatly reduced and that objects appeared dark; of late objects seem white. Sees objects best to his left; poorly in front and to the right. Pupillary reactions, anterior chamber and tension normal. R. E. V. 20/20; L. E. V., counts fingers at 4 to 6 feet. Urine normal. Wassermann negative. Color of retina in upper and outer quadrant has varied from whitish and a pale pink to a dark red from time to time. Folds are moderate. Disc and about 3/5 of the fundus are not involved.

DISCUSSION. Dr. Neeper agrees with Dr. Pattee that it is a case of detached retina and not a tumor.

Old Choroiditis.

Mrs. S., age 43. Has three children, ages 9, 13 and 20 years. In 1908 had an attack of iridocyclitis of three months' duration. She complained of great debility. Right pupil dilated, punctate deposits of infiltration all over the cornea, with a dense central deposit of same. Much pain, photophobia and redness of bulbar conjunctiva. Iris figure lost. Right vision, counts fingers at 10 feet. Was given potassium iodide, mercury and iron. In three months vision cleared and was 20/30, cornea clear and iris normal.

August, 1911, had recurrence, but of milder degree, lasting two months. Vision reduced to counting fingers at 15 feet.

There are some vitreous opacities. A large white area above disc. Dark pigment areas are numerous above white patch. Vision is 20/20-4. Urine normal.

Optic Atrophy Right—Old Traumatic Injury Left Eye.

Mr. H. M., age 69. Steel worker. Left eye injured 16 years ago by rebound of limb of tree. The eye was very much swollen, reddened and reduced in vision. The vision improved for three months, after which there was no change, so far as he could tell. There is a scar below the left eye, but no evidence of penetrating injury of the globe. The left vision has been slightly reduced since the injury. The left pupil is dilated, the fundus and disc normal. L. E. V. 16/32.

About three months ago he discovered that the vision of the right eye had so failed that it was lower than that of the left, whereas formerly the reverse was true. The right pupil is normal in size and action. Tension and anterior chamber normal. The retinal vessels present evidence of arterial sclerosis and the disc is very pale. R. E. V. 16/100. Admits gonorrhoea but denies syphilis. Blood pressure 160 mm. Hg. Urine normal.

DISCUSSION. Dr. Jackson believes that the retina of the right eye is somewhat swollen.

Dr. Neeper thought that there was a blocking of the retinal vessels due to embolus.

E. T. Boyd,
Secretary.

NEWS AND NOTES.

Personals and items of interest should be sent to Dr. Emory Hill, 30 North Michigan avenue, Chicago, Ill.

As these columns go to press on the 15th of the month previous to publication, contributors will kindly send in their items before that date.

The home of Dr. D. T. Vail of Cincinnati was recently ransacked by burglars.

Dr. Christian R. Holmes of Cincinnati has returned from a vacation in California.

The city of San Antonio has offered a site for the Texas State Asylum for the Blind.

Dr. J. R. Garrett has been elected president of the Roanoke, Virginia, Academy of Medicine.

Dr. Frank E. Tull of Albuquerque, New Mexico, has been re-elected treasurer of the State Medical Society.

Dr. Luther C. Peters was recently appointed associate professor of ophthalmology in the Philadelphia Polyclinic.

A new building for colored inmates of the State School for the Deaf and Blind is planned at St. Augustine, Florida, to cost $30,000.

Dr. Harry Friedenwald of Baltimore was one of the speakers at the opening exercises of the University of Maryland Medical School.

Courses of instruction are being given by the Chicago Board of Health for midwives, and examinations preliminary to licensure.

The State Board of Health of Wisconsin announces that silver nitrate solution will be furnished free of charge to physicians and midwives.

The Austro-Hungarian Relief Society of Chicago has contributed $2,000 to be used by the Munich Red Cross Hospital for the relief of blind soldiers.

Dr. Allen Greenwood of Boston is in charge of an Eye Hospital on the Belgian-French frontier, and expects to remain to the end of the war.

An instructive discussion of ways for blind people to earn a living will be found in Leslie's magazine for September 23. The author is James A. Hare.

Professor Piper, the physiologist, of Berlin has been killed in battle at the age of 38. He will be remembered for his investigations in optics and acoustics.

Resolutions of respect to the memory of the late Dr. Horatio N. Spencer were recently passed by the staff and trustees of the St. Louis Eye, Ear, Nose and Throat Hospital.

Local physicians of Martin's Ferry, Ohio, in coöperation with the school authorities, have established a clinic for the treatment of defects in school children regardless of their ability to pay.

At the recent meeting of the Pennsylvania Medical Society at Philadelphia Dr. C. M. Harris of Johnstown was elected chairman, and Dr. George B. Jobson of Franklin, secretary, of the eye, ear, nose and throat section.

At the forthcoming meeting of the National Committee for the Prevention of Blindness in New York City on November 4th, Ex-President Wm. H. Taft and Dr. George E. deSchweinitz will be speakers.

The following deaths of ophthalmologists are announced·

Dr. G. F. M. Lamont, Newark, N. J., aged 42.
Dr. David Hunt, Boston, aged 70.
Dr. Stuart W. Smith, Denison, Tex., aged 64.

It will interest the many American students and admirers of Professor Ernst Fuchs of the University of Vienna to know that he has resigned from the chair of ophthalmology in that institution. He will be succeeded by Professor S. Bernheimer of Innsbruck.

The new optometry course given by the University of Ohio is an elaborate affair, requiring a high school course as a preliminary. The course lasts four years, and leads to a bachelor degree. Among the subjects required are chemistry, psychology, general anatomy, pathology, histology, embryology, drawing, exposition, and argumentation. For some strange reason neither agriculture, political economy nor theology is included.

A series of evening free lectures before the Ricketts Experimental Surgical Research Laboratory of Cincinnati is announced for the fall and winter months. Among the speakers are Dr. Mortimer Frank of Chicago, who will lecture on "The History of Glands;" Dr. Wm. E. Schenck, whose subject is "Optical Instruments, Their Construction and Uses;" Dr. R. C. Hellebauer of Cincinnati on "The Comparative Study of the Eyes," and Dr. J. A. Stucky of Lexington, Ky., who will tell of the trachoma problem in the mountains of Kentucky.

At the recent annual meeting of the Indiana Medical Society at Indianapolis, Dr. George F. Keiper was elected president of the society. Dr. J. F. Barnhill of Indianapolis was elected chairman and Dr. E. M. Shankin of Hammond, secretary of the eye, ear, nose and throat section. Dr. Albert E. Bulson, Jr., of Fort Wayne was elected as one of the delegates to the American Medical Association. Dr. Casey A. Wood of Chicago was the guest of honor of the section and was entertained at a luncheon which was attended by the entire section.

The recent meeting of the American Academy of Ophthalmology and Oto-Laryngology in Chicago was a very successful one. The clinics held in Cook County Hospital, Illinois Eye and Ear Infirmary, St. Luke's Hospital and elsewhere were well attended and the fellows and members appeared to be much interested in them.

The following officers were elected for the ensuing year: President, Dr. John E. Brown, Columbus, Ohio; Vice President, Dr. Thomas E. Carmody, Denver, Colorado. There was little change in the other officers of the Academy. The next meeting takes place in Memphis, Tenn.

The Alumni Association of the Illinois Charitable Eye and Ear Infirmary held a meeting and banquet at the Sherman House, Chicago, on October 7. Dr. Edward Jackson of Denver was the guest of honor. The following officers were elected: Oscar Dodd, president; Norval H. Pierce, vice-president; L. G. Hoffman, treasurer; E. G. Nadeau, secretary; J. Roth, corresponding secretary.

A committee of the New York Academy of Medicine, appointed to consider the question of myopia in school children, has made the following recommendations:

"That, as rapidly as possible, old nonadjustable school furniture should be replaced by the more modern and more adjustable furniture; that at the beginning of each school year a circular be sent to all principals of schools calling their attention to the importance of adjusting school furniture to the needs of the individual; that movable furniture be provided for the first few grades especially, with the approval of the fire department; that the Department of Education should make an investigation and study of the slope of desks to determine some feasible plan of providing a desk top capable of prompt adjustment to the proper angle for writing purposes; that special attention be paid to the importance of bringing books up toward the eye of the child, instead of permitting the child to bring the eyes closer to the book; and that the Department of Health emphasize the importance of the relation existing between correct posture during writing and spinal curvature and visual defects. A number of suggestions were made with reference to proper lighting and the opinion was expressed that the use of colored crayons should be interdicted except for unusual work. The tentative standard for approving textbooks for pupil's use as adopted by the Board of Superintendents was thought to cover the details desirable in textbooks and was tentatively approved."

NEW BOOKS

Albrecht von Graefe's Archiv für Ophthalmologie XC Band., with 10 Plates and 62 Illustrations in the Text. Special number in Honor of Prof. Dr. H. Sattler of Leipsig upon the occasion of his Seventieth Birthday.

CHICAGO EYE CLINICS.

Hour.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
9 A.M.	Richard S. Pattillo (P.-G.) G. W. Mahoney (Poli.) R. B. Stephenson (P.-G.) Carl Wagner (E.E.N.T.)	*Geo. F. Suker (P.-G.) C. H. Francis (Poli.) A. Duncan (P.-G.) A. G. Wippern (E.E.N.T.)	W. F. Coleman (P.-G.) S. M. Hager (Poli.) H. N. Lyon (P.-G.) Carl Wagner (E.E.N.T.)	G. W. Mahoney (Poli.) Rich'd S. Pattillo (P.-G.) R. B. Stephenson (P.-G.) A. G. Wippern (E.E.N.T.)	C. H. Francis (Poli.) R. B. Stephenson (P.-G.) J. A. Cavanaugh (E. E. N. T.)	S. M. Hager (Poli.) C. W. Hawley (P.-G.) H. J. Morlan (P.-G.) A. G. Wippern (E.E.N.T.)
10 A.M.	Brown Pusey (N.W.U.) Geo. T. Jordan (N.W.U.) Robert Blue (N.W.U.) Every day, 10-12 A. M. Harry Gradle (E.E.N.T.)	J. R. Hoffman (E.E.N.T.)	Harry Gradle (E.E.N.T.)	J. R. Hoffman (E.E.N.T.)	Harry Gradle (E.E.N.T.)	J. R. Hoffman (E.E.N.T.)
1 P.M.	M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) Emily Selby (Inf.) *H. W. Woodruff (Inf.) *Oscar Dodd (Inf.) C. A. Leenheer (Inf.) D. W. Eiss (Inf.) E. R. Cressley (Inf.) C. C. Clement (Inf.) E. V. L. Brown (County) and Geo. F. Suker (County) Daily, 2:30 P. M. W. A. Fisher (E.E.N.T.)	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) E. K. Findlay (Inf.) Wm. E. Gamble (Inf.) J. B. Loring (Inf.) S. L. McCreight (C.C.S.) Robt. Von der Heydt (Inf.) L. G. Hoffmann (Inf.) A. P. Hunneman (Inf.) M. Goldenberg (Inf.) Francis Lane (Inf.) H. Walker (Inf.) W. A. Fisher (E.E.N.T.)	M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) Emily Selby (Inf.) *H. W. Woodruff (Inf. *Oscar Dodd (Inf.) C. A. Leenheer (Inf.) D. W. Eiss (Inf.) E. R. Cressley (Inf.) C. C. Clement (Inf.) Oliver Tydings (E. E. N. T.)	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) *Frank Allport (St. Luke's) *Frank Brawley (St. Luke's) E. K. Findlay (Inf.) Wm. E. Gamble (Inf.) *Paul Guilford (St. Luke's) *Casey Wood (St. Luke's) *T. A. Woodruff (St. Luke's) J. B. Loring, (Inf.) S. L. McCreight (C.C.S.) Robt. Von der Heydt (Inf.) L. G. Hoffman (Inf.) A. P. Hunneman (Inf.) M. Goldenberg (Inf.) Francis Lane (Inf.) H. Walker (Inf.) W. A. Fisher (E.E.N.T.)	M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) Emily Selby (Inf.) *Oscar Dodd (Inf.) C. A. Leenheer (Inf.) D. W. Eiss (Inf.) E. R. Cressley (Inf.) C. C. Clement (Inf.) H. W. Woodruff (Inf.) W. A. Fisher (E.E.N.T.)	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) E. K. Findlay (Inf.) Wm. E. Gamble (Inf.) J. B. Loring (Inf.) S. L. McCreight (C.C.S.) Robt. Von der Heydt (Inf.) L. G. Hoffman (Inf.) A. P. Hunneman (Inf.) M. Goldenberg (Inf.) Francis Lane (Inf.) H. Walker (Inf.) Oliver Tydings (E. E. N. T.)
3 P.M.	*Wm. E. Gamble (U. of I.) Wm. H. Wilder (Rush) H. S. Gradle Daily 3-5 (E. M. D.)	R. J. Tivnen (M. H.)	W. Allen Barr (C.C.S.) *Wm. E. Gamble (U. of I.)	Wm. H. Wilder (Rush) R. J. Tivnen (M. H.)	W. Allen Barr (C.C.S.)	Geo. F. Suker (P. G.) 2-5 H. Cuthbertson A. Duncan
4 P.M.	W. F. Coleman (P.-G.) H. N. Lyon (P.-G.) 2-5	C. W. Hawley (P.-G.) 2-5 J. F. Campbell (P.-G.) H. J. Morlan (P.-G.)	J. B. Loring (U. of I.) E. K. Findlay (U. of I.) G. F. Suker (P.-G.) 2-5 H. Cuthbertson (P.-G.)	C. W. Hawley (P.-G.) J. F. Campbell (P.-G.) H. J. Morlan (P.-G.)	W. F. Coleman (P.-G.) 2-5 H. N. Lyon (P.-G.)	

*Special operative eye clinic.

ABBREVIATIONS:

C. C. S.: Chicago Clinical School, 1844 W. Harrison Street.

E. M. D.: Emanuel Mandel Dispensary, 1512 Maxwell St.

County: Cook County Hospital, W. Harrison and Honore Streets.

Inf.: Illinois Charitable Eye and Ear Infirmary, Peoria and Adams Streets.

M. H.: Mercy Hospital.

Poli.: Chicago Policlinic and Hospital, 221 W. Chicago Avenue.

P.-G.: Post-Graduate Medical School of Chicago, 2400 Dearborn Street.

N. W. U.: Northwestern University, 2431 Dearborn Street.

Rush: Rush Medical College, W. Harrison and Wood Streets.

St. Luke's: St. Luke's Hospital, 1416 Indiana Avenue.

U. of I.: College of Medicine, University of Illinois, Congress and Lincoln Streets.

THE
OPHTHALMIC RECORD
A MONTHLY REVIEW OF THE PROGRESS
OF OPHTHALMOLOGY

Vol. XXIV CHICAGO, DECEMBER, 1915 No. 12, New Series

ORIGINAL ARTICLES

CONCERNING FOCAL INFECTIONS IN THEIR RELATION TO CERTAIN DISORDERS OF THE UVEAL TRACT.

BY
G. E. de SCHWEINITZ, M. D.
PHILADELPHIA.

Nearly twenty years ago W. A. Brailey and Sydney Stephenson[1] reached the conclusion that most forms of iridocyclitis resulted from the action of microörganisms, and it is safe to repeat, in so far as our present knowledge extends, that almost every case of inflammation of the uveal tract, that is, of uveitis or iridocyclitis, is of septic or toxic origin. Much attention has been paid to this subject in recent years, and discussing it from various points of view, many papers have been published, for example, by Elschnig,[2] W. Lang,[3] B. T. Lang,[4] Reber,[5] Gouldcn,[6] Beaumont,[7] the writer,[8] and many other investigators. To fulfil the obligations of modern practice it is necessary that uveitis or iridocyclitis shall be studied thoroughly, not merely in relation to its local manifestations, not merely, too, in relation to a probable underlying constitutional difficulty, but especially in an endeavor to ascertain the position of focal infection which may be the origin of a toxemia of which the patient is the subject, and which in the eye finds one of its many interpretations. In other words, to use Mr. Beaumont's apt sentence, "the dethronement of iridocyclitis from the position of an independent disease to the secondary one of a complication," must be kept constantly in mind. Such focal infections, in the language of Rosenow, quoted by Henry Ludwig Ulrich,[1] in an excellent and suggestive article, "are no longer to be looked upon merely as a place of entrance of bacteria, but as a place where conditions are favorable for them to acquire the properties which give them a wide range of affinities for various structures."

---

[1] System of Diseases of the Eye, III, 1898, edited by Norris and Oliver.

[2] Klin. Monatsbl. f. Augenheilk., XLIII, No. 2, 1905, and Archiv. f. Ophthal. LXXVIII, p. 3, 1911.

[3] Lancet, May 17, 1913.

[4] British Medical Journal, Feb. 22, 1913.

[5] Ophthalmic Record, January, 1915; also Trans. Acad. of Oph. and Oto-Lar. 1911, 287.

[6] Royal London Ophthalmic Hospital Reports, Vol. XIX, p. 3.

[7] British Medical Journal, Sept. 16, 1914.

[8] Trans. of the Section on Ophthalmology, A. M. A., 1906, p. 377; Journal of the A. M. A., L., 1908, p. 2040; The Pathogenesis of Chronic Uveitis, Trans. Section of Ophthalmology of the Seventeenth International Congress of Medicine, London, Aug., 1913; Journal of the Iowa State Medical Society, Sept., 1913: In these papers previous literature on this subject is analyzed.

Syphilis continues to hold its undisputed position as the chief instigator of various types of iridocyclitis or uveitis, and, certainly in the chronic forms of this disease, tuberculosis plays an important, if not the most important role. Of gonorrhoea and its activities in this regard somewhat may be said later. Rheumatism, as a cause of iridocyclitis, has in large measure been relegated to the background, if this term serves to indicate that specific infection ordinarily known as acute rheumatism or rheumatic fever. To be sure, iritic involvements which follow or accompany acute joint rheumatism, and which depend upon metastasis of streptococci, proceeding from purulent processes in these joints, have been described, but with such processes we are not now concerned. Iridocyclitis of the ordinary type is rarely, if ever, coincident with acute rheumatism. Apparently in this disease, except in the circumstances referred to, the toxins do not find in the iris a suitable nidus. On the other hand, the subjects of so-called muscular rheumatism or myalgia (perhaps dependent, according to Rosenow, upon a myositis due to streptococci, related to those found by Poynton, Paine, Meyer and others in acute rheumatism), and of the various types of chronic polyarthritis, are also frequently the subjects of iridocyclitis. Formerly these varieties of iritis and iridocyclitis were labeled "rheumatic," but in place of this title, following a suggestion of Harrison Butler, we have largely adopted the term "toxemic," in order to avoid reference to an unproved etiology.

The important part which septic oral conditions play in the development of a number of diseases and organ lesions, to wit, intestinal disturbance, endocarditis, arthritis, nephritis, etc., is a matter of common knowledge, and in this respect the eye is not spared.

---

[1] Journal of the A. M. A., Nov. 6, 1915, p. 1619.

William Lang[1] in an examination of the histories of 10,000 private patients, found 215 case records of eye inflammation caused by sepsis, 139 of them having been attributed to pyorrhoea alveolaris. In these 215 septic cases the iris was affected 87 times, the ciliary body 79, and the choroid 65 times. B. T. Lang[2] in 71 out of 176 cases of inflammatory lesions of the eye traced the cause of the ocular lesion to buccal sepsis. Charles Goulden,[3] among a total of 6,835 patients, found 173 examples of disease of the uveal tract, which are from the etiologic standpoint enumerated in a tabular manner. In this list there are 142 cases of iridocyclitis, and a diseased mucous membrane was found in 78 of them. Of 9 cases of disseminated choroiditis, in 1 a diseased mucous membrane was found to be the cause. Four cases of a solitary patch of choroiditis with punctate keratitis were all thought to be due to infections of mucous membranes. Goulden believes that two conditions of the teeth may cause infection of the uveal tract, an abscess in connection with a single tooth, and pyorrhoea alveolaris, many tooth sockets being affected. In this connection the research undertaken at the University of Minnesota Hospital may be referred to. In an effort to correlate oral sepsis with systemic lesions, special inspection of the patients' mouths was made for pyorrhoea, gingivitis, caries, and by means of X-rays for apical abscesses. The results of this research are recorded by H. L. Ulrich.[1] In a little over 68 per cent of all artificially devitalized teeth apical abscesses were found. The importance of X-ray examination in this investigation must be emphasized, and focal infection in so far as the teeth are concerned cannot be eliminated until this agent has been employed.

The researches of Allen J. Smith and M. T. Barrett of the University of Pennsylvania and the investigations of William S. Middleton indicate that parasitic amebas of the mouth hold an important relationship to the etiology of pyorrhoea alveolaris. As has been pointed out by these authors, it is not improbable that the endamebas themselves are more innocent than the bacteria, but, as they further point out, they feed upon the vegetable microörganisms, and in these bacterial phagocytic actions it is possible that they set free from this and from that organism various endotoxins, and it is not unlikely that the bacterial toxins thus originated play an important part, a more important part, in fact, than the amebic toxins themselves. The end results of this toxic absorption vary, and in the language of Smith and Barrett, manifest themselves sometimes as hemolysis, sometimes as a cellular degeneration, and sometimes as an inflammatory change in a synovial or serous membrane. The relationship of such toxic absorption to arthritis, endocarditis, etc., is well known; but it has an equally important and distinct relation to iridocyclitis, and until comparatively recent years this has not been so well known. Quoting from a previous paper on this subject,[1] it may be said that the organisms in a septic mouth are perfectly capable of producing a non-septic uveitis, although the primary lesion is suppurative, because they decrease in virulence in their contact with blood serum, and they are not contained in emboli or blood clot. Moreover, although the organisms may not be found in the anterior chamber, just as they may not be found in the fluid of inflamed joints, it does not prove that they may not have been carried there originally, inasmuch as they may have been destroyed by the very virulence of the inflammation which they have caused.

---

[1] Lancet, May 17, 1913.
[2] Brit. Med. Journ., Feb. 22, 1913.
[3] Royal London Ophthalmic Hospital Reports, XIX, Part 3.

While I am well aware that the influence of a circulating bacterial toxin has been denied, it would seem, to use the language of A. C. Abbott, that it is of fundamental importance in this connection to hold fast to the belief that in the mechanism of intoxication each toxin finds elements in the body, organ or cell, for which it possesses a specific combining affinity. And again, to quote this author, if we are robbed of the hypothesis that toxins of all sorts find in the body cells or parts of cells with which they pair off specifically, our conception of the mechanism of infection and immunity must fall. It therefore would seem perfectly fair to assume that either as the result of a bacterial toxin, if not of the bacterial element itself, iridocyclitis may arise, and the focal infection in all probability is very frequently to be found in the mouth, and in connection with the teeth.

The point I would particularly urge is, and it has been many times urged in the last few years by those who have interested themselves in this subject, that general oral sepsis or extensive pyorrhoea alveolaris need not necessarily be present as the instigator of uveitis. The infection may come on from a small tooth-root abscess, or from a blind abscess, the presence of which is unsuspected, and often undetected, until the X-rays are employed. F. C. Todd[1] records this case history.

---

[1] Loc. cit.
[1] Journal of the Iowa State Medical Society, Sept., 1915.

A man, aged 62, with an acute uveitis, underwent all forms of examination, with complete elimination of the possibility of syphilis, rheumatism, gonorrhoea, etc., underwent all sorts of treatments without permanent relief, and the disease became chronic. The patient's teeth had many times been examined, always with negative results, when a small abscess at the root of one tooth was discovered, and on opening this a fistulous tract was found extending to the tooth. Curetting and drainage of the cavity was followed by permanent speedy relief.

An interesting example which may be quoted in this connection occurred comparatively recently in my own practice, and is one of the many which I could recite. A man, aged 43, perfectly sound in all respects, with, however, in general terms, a gouty ancestry, acquired in the lower and inner portion of the right eye a large area of acute exudative choroiditis, and speedily infiltration of the vitreous and a sharp punctate keratitis, with rise of intraocular tension. Every test gave negative results. His teeth and rhino-pharynx were examined on a number of occasions by experts, and no lesion was found. In spite of persistent treatment, which, to be sure, secured amelioration but did not check recurrences, especially associated with fresh vitreous infiltration, these exacerbations, continued for a number of months. Additional expert examination at the expiration of this period, detected at the root of the right upper first molar a small exostosis, pressing on the root of the tooth, and a small pocket of pus. Since the removal of this tooth, and sterilization of this cavity there has been (and more than two years have elapsed) no renewal of the exacerbations.

Especially striking in this matter is the relation of relapses of uveal tract inflammation to focal infection in the mouth. Goulden summarizes the case history of one of his patients thus: Oral sepsis, arthritis and iridocyclitis; cure of the arthritis and iridocyclitis as the result of the removal of the decayed teeth; recurrence of the oral sepsis from decay of the remaining teeth; recurrence of the iridocyclitis.

---

[1] Case history personally communicated by Dr. Todd, previously reported in the Section on Ophthalmology, 7th International Congress of Medicine.

This must have been a not infrequent observation in the practice of many ophthalmic surgeons, even though arthritis may not have been one of the complicating conditions, and these two brief case histories indicate that oral sepsis not only is an etiologic factor in the origin of uveal tract inflammation, but is an important factor in determining, on the one hand, exacerbations, and on the other hand, relapses.

Focal infections in the nose, the nasal accessory sinuses, the tonsils, the skin, the uterin cavity, the prostate, and probably the seminal vesicles, rank with those which have just been described as existing in the buccal mucous membrane, and especially at the roots of teeth, in their potency in determining attacks of iritis and iridocyclitis, and it is not necessary to burden this communication with clinical histories. This origin of iritis has become so well known that the study of each inflammation of the uveal tract of the character now in discussion is incomplete until expert examinations of these regions have been made.

Particular attention must be paid to the tonsil, and a sentence taken from Ulrich's paper is important in this regard: "Experience with alveolar infection in which systemic symptoms were present has made us very cautious concerning the apparently innocent-looking tonsil. Invariably the same tonsil, on closer inspection, and particularly after it had been removed, under protest by the throat specialist, has proved our suspicions correct."

A patient who for nearly a year had experienced with irritating frequency attacks of relapsing iritis of the left eye, and who had been most thoroughly examined in every respect from the constitutional and local standpoint, and therefore whose naso-pharynx had been submitted to investigation, was urged to permit an even more searching examination of the tonsils than had up to that time been undertaken, with the result of finding, in the language of the surgeon who made the examination, "the foulest accumulation back of her left tonsil that I have ever cleaned out." The left iris was the one which had invariably been inflamed and the focal infection existed in the left tonsil. This is a good example of the necessity of thorough examination of the tonsils by the most expert methods, even when they are apparently, on the surface at least, free from infection, and is another observation confirming the one made by R. E. Reeve of homolateral uveitis and tonsillar disease.

Referring once more to the relation between boils and uveal tract disease, it may be stated that the skin lesion may be the origin of an infection which is transferred to the uvea, or, as Dr. Cecil Shaw has said, the skin lesion and the uveitis may be coincident. But a very interesting condition is this, to wit, that the skin lesions or boils and the uvetitis may alternate, that is, at one time the patient may be the subject of boils, and at another period of uveitis. Of this curious alternation I have recorded several examples.[1]

The relationship of gastrointestinal or enterogenous so-called autointoxication, caused by affections of the digestive tract which lead to abnormal fermentation and decomposition processes to the development of uveitis and iridocyclitis has received much attention in recent years. It is not necessary in this communication to make reference to the sharp controversy which has arisen between several writers on this subject. This I have discussed elsewhere.[2] But all of us will surely agree with J. B. Lawford's[3] statement that even if positive proof of the dependence of certain ocular lesions upon alimentary toxemia is still wanting, much evidence from the clinical and laboratory investigation may be adduced in support of the contention, and he urges that investigation along this line shall continue. As I have elsewhere stated, although there is no proof that any toxic substance elaborated within the tissues in the course of a so-called gastrointestinal autointoxication has of itself by its toxic properties produced a uveitis, we do know that intestinal putrefaction depends upon the activity of bacteria upon the food-stuffs in the intestines, and there is good reason to believe that these bacteria or their toxic products may be the cause of an inflammation of the uveal tract, exactly in the same way as bacteria arising from focal infections elsewhere in the body have a similar influence, and therefore gastrointestinal intoxications are of great importance in their etiological relationship to uveal tract disorders. This matter has been discussed effectively by Hiram Woods and Frank Brawley in the November number of the Ophthalmic Record. As Brawley has well said in concluding his article: "In the presence of disease in any part of the body, the obvious course is to place that body in the highest state of efficiency and resistance by balancing up the processes of metabolism."

---

[1] Trans. Ophthalmic Section of the College of Physicians of Phila., 1912.

[2] The Pathogenesis of Chronic Uveitis, loc. cit.

[3] Proceedings of the Royal Society of Medicine, May, 1913, p. 121.

Keeping Dr. Brawley's sentence in mind, the following case history, very much condensed, may be interesting: A single woman of middle life, eight years prior to examination, had a severe attack of uveitis of the left eye, and in more recent years a repetition of this attack, so that when she came for examination the left eye presented the typical lesions of chronic uveitis, with very large spots on the posterior surface of the cornea, annular synechia, beginning opacity of the lens, and only the ability to distinguish shadows. She had from the very beginning been most carefully treated. Serological tests and tests for tuberculosis had been negative. There had been no failure carefully to examine the sinuses, naso-pharynx, etc., and particularly the mouth. She was the subject of marked Riggs' disease. When she came under my care many of these examinations were repeated, confirming the results which had been obtained elsewhere X-ray examination of the teeth, however, had not been made, and this revealed four typical apical abscesses at the roots of the lower incisors. These teeth were removed and the cavities sterilized. The advice that a metabolic study should be undertaken was followed, and the examinations were made by Dr. Alonzo Taylor, who reported, after a study which extended over six days, as follows: "The urine and stools contain amines of the histone fraction of proteins, due to abnormal reaction of intestinal bacteria. The patient has intestinal stasis, and an abnormal flora in the intestines. I do not suppose, offhand, that the substances identified are in themselves responsible for the eye lesions, although iminazolethyl-amine is known to be toxic to the circulation; but they indicate definitely the existence of an abnormal bacterial decomposition within the intestine, the germs of which we would expect to form toxins of their own."

Evidently the value of treatment which may be determined by Dr. Taylor's examination, and which was carried out according to the findings of the X-ray examination, should be useful in restoring this patient's resisting power and rendering her less liable to an attack of uveal tract inflammation of her right eye. This patient's history also furnishes a good example of the fact that the sources of infection may come from various regions in one and the same subject, sinuses, teeth, intestinal tract, and that therefore the discovery of a single focal infection, for example, at the root of a tooth or in a tonsillar crypt, should not check the search for septic areas elsewhere in the body.

Moreover, even if iridocyclitis is definitely due, we will say, to syphilis, the removal of a focal infection, for instance, in the tonsil, ethmoid or gums, is apparently sometimes necessary in order to secure rapidly the best results from anti-syphilitic treatment. I have placed some such case histories upon record, and may quote in illustration one of them. A man in the late twenties consulted me because of failure of ordinary treatment to relieve a violent and apparently progressive uveitis, with deep anterior chamber, k. p. and vitreous infiltration. He had a perfectly clear history of syphilitic infection, with the usual secondary manifestations, and for a period of time prior to his eye inflammation had been under treatment for a specific throat affection. Now the ocular disease was entirely, or rather unsatisfactorily influenced by thorough mercurial treatment (neither salvarsan nor neo-salvarsan was used). It equally resisted very large doses of salicylates, and thorough intestinal antisepsis. Examination revealed that the teeth and tonsils were in good condition, but some purulent pockets were found in the right ethmoid, and after this region was brought into a normal condition the ocular inflammation subsided with almost startling rapidity. Now it is of course perfectly possible that from the very beginning this may have been a uveitis due to infection from a purulent ethmoiditis, and that the original septic infection had nothing to do with the iridocyclitis. Be this as it may, the mere presence, or probable presence, of some such well-known etiologic factor as syphilis should not in itself prevent a search for focal areas of infection as they have been described.

So much has been said in regard to iridocyclitis of Neisser origin in many papers on this subject during recent years, that it is necessary only to reiterate that the evidence is absolutely convincing that many forms of iritis, especially those which used to be called rheumatic, are really gonorrhoeal in origin, and they may be the sequels of such an infection, although there has been a long interval between the acquisition of the gonorrhoea and of the iritis, a number of years, for example. In some cases the period of time between the attack of gonorrhoea and the inflammation of the iris has been as great as twenty years. Sometimes the gonococci can be found by careful centrifugation of the urine, or by discovering a small granulating area just posterior to a stricture of large caliber, where the Neisser organism has found a favorable nidus.

Whether it is wise to treat various types of iridocyclitis which depend upon focal infections in mucous membranes by bacterins is a disputed point. Personally I have not had sufficient experience to express an opinion with definiteness, although I have used them a good deal in the treatment of certain types of ulceration of the cornea. In gonorrhoeal iritis, however, or iridocyclitis, I have been impressed with the good results which may follow the administration of a Neisser bacterin, large doses being used, from 50,000,000 to 100,000,000 organisms, at intervals of three to seven days, and in one patient whose case history has been reported from my service by Dr. Edward Shumway, the relief of the ocular condition, as well as the relief of an associated arthritis, was most marked.

It has seemed to me, and also to some of my colleagues, that there is a good deal of danger, as far as the eyes are concerned, in the use, I should say the imprudent use, of bacterial vaccins, and recently I have observed the development of a uveitis after repeated injections of a streptococcus bacterin for the relief of rheumatism, which gave me the impression of being an anaphylactic uveitis, and which subsided only after the vaccin therapy was discontinued.

The object of this communication is simply to emphasize by a brief record of personal experience, the great value of the search for focal infections in the treatment of iridocyclitis and uveitis, and to emphasize, also, the necessity of making the search a thorough one.

OCULAR DISEASES RESULTING FROM DENTAL LESIONS.

BY
ARTHUR D. BLACK, A. M., M. D., D. D. S.
CHICAGO.

From the viewpoint of dental pathology, the ocular disturbances which result from dental lesions should be divided into two groups: 1. Reflex neuroses, presenting as sensory, vaso-motor or muscular disorders; 2. Inflammations of the various tissues of the eye, due to infections. The former are practically always due to irritation of a vital pulp of a tooth, although an occasional case may be due to an impacted tooth; the latter are practically always due to an infection involving the peridental membrane, either in the form of an alveolar abscess at the root apex, or a pus pocket alongside the root. As probably not less than fifty per cent of all persons having teeth present one of these conditions, the mouth is doubtless the most frequent offender in cases of secondary eye lesions.

The periodical literature of dentistry dates from 1839. A review of the articles on ocular diseases caused by dental lesions in one series of journals—the American Journal of Dental Science, 1839-1850; the Dental News Letter, 1847-1859; the Dental Cosmos, 1859 to date—which are included in the accompanying bibliography, serves to establish the long recognized relationship between diseases of the mouth and the eye. The majority of these articles are excerpts or abstracts, others are full reprints. from medical or ophthalmic journals. That the members of the dental profession have shown considerable interest in these diseases is evidenced by the appearance in dental literature of a number of articles by eminent ophthalmologists, and it is believed that these present as complete a statement of the subject as may be found in the literature of ophthalmology. A notable paper [25] along this line was read by Dr. Frank Allport before the Chicago Dental Society in 1904.

It is quite natural that most such cases should come to the attention of the ophthalmologist first, and be seen by the dentist secondarily. It is to be hoped that a better diffusion of present knowledge will lead to early and exact diagnosis of a larger percentage of cases. The fact that some mouth infections, such as "blind" alveolar abscesses, are usually not found unless there is an indication for a special search with radiographs, makes it imperative that there be closer co-operation between dentists and other specialists. The day seems to be dawning when the dentist will come to appreciate the fact that one of his most important duties is to keep the mouths of his patients free from infection, rather than to find such foci after their presence has been heralded by a secondary manifestation.

It is interesting to note many articles in the literature of both ophthalmology and dentistry in which rheumatism, gout, etc., are mentioned as causes of the eye or mouth lesions. In view of the investigations by Billings, Rosenow, and others, on focal infections, it would seem that, so far as the mouth is concerned, the dental lesion is the cause, instead of the result of the arthritis, etc. Should we not reasonably expect in the eye cases of this group, that the real cause for both the systemic condition and the ocular manifestations may be found in the mouth, tonsils, or other frequent primary focus?

I have not found in the articles reviewed an effort to describe or classify the pathological conditions in the mouth which are causal in these cases and it is with the belief that ophthalmologists will be interested in such a presentation that this paper is written.

In those cases in which the ocular manifestation is a nervous reflex, we would expect to find, if the cause were in the mouth, an irritation of a vital pulp of a tooth. These irritations are usually from thermal changes—hot or cold foods or drinks—or contact of a foreign substance in cases in which the pulp is actually exposed. An exposed pulp may be infected and yet remain vital or partially so for a long time. The condition within the tooth which causes the reflex in the eye or elsewhere is due principally to pressure on the terminal branches of the fifth nerve within the pulp chamber of the tooth, the arrangement of the tissues being such that severe pain may be caused by very slight inflammation. The pulp is enclosed within the solid dentin, and can not expand, while the blood vessels of the pulp have unusually thin walls, which dilate upon the slightest irritation, and cause pain by compressing the nerve filaments within the tissue.

Therefore, when such reflex eye symptoms present, inquiry should be directed toward an inflammation of the pulp in which the question of infection is practically immaterial. If a tooth is found which is sensitive to heat or cold or to the touch of an instrument, it should be considered a possible cause. In cases in which the teeth are missing from their proper places in the arch, particularly cuspids and third molars, and there is not a positive history of extraction, radiographs should be taken to determine whether or not they may be impacted. The upper cuspids and the lower third molars are the most frequent offenders.

When the eye symptoms are of a toxic or infective nature, the condition of the peridental membrane should be investigated in searching for a cause in the mouth. There are two distinct pathological processes which involve the peridental membrane: 1. Alveolar abscess, which always occurs subsequent to the death of the pulp and necessarily involves the tissues about the apex of the root; 2. Chronic suppurative pericementitis, so-called pyorrhea, which always begins at the gingival margins and very gradually involves and cuts away the peridental membrane from the root, forming a pus pocket.

An alveolar abscess will generally become chronic if the tooth does not receive prompt treatment, and the chronic abscess gradually destroys the peridental membrane about the apex of the root, also the bone in the immediate vicinity. Such an abscess may form a sinus, which usually discharges through the gum, or it may remain as a "blind" abscess, without a sinus.

In addition to the endogenous routes of transmission via blood stream, lymphatics or direct continuity of tissue, there are doubtless occasional cases of exogenous transmission from mouth to eye. Dr. G. V. Black reported a case [40] in which an inflammation of the eyes was found to be due to the transfer by the finger of infection from a chronic abscess in the mouth. There was an abscess over the root of an upper incisor which caused a slight swelling of the gum every few days, and it was learned that the patient was in the habit of breaking the abscess by pressure with the finger, subsequently carrying the infection to the eyes.

The infections of the peridental membrane occupy a peculiar place in pathology, because of the unusual make-up of the tissue. The dentin, which forms the bulk of the root of the tooth, is covered with a layer of cementum, which corresponds in many respects to bone. The periosteum which lines the bone of the alveolar socket and the cementum covering the root are connected by many bundles of fibres of the peridental membrane, the ends of which are embedded in the periosteum and the cementum, respectively (See Figs. 1 and 2). The function of these fibres is to hold the tooth in position and cushion it against the force of mastication. Lying on the surface of the cementum, between the ends of these fibres, is a layer of cementoblasts, which correspond to the osteoblasts lying on the surface of the periosteum; and their functions are similar. The important difference between the two tissues is that the cementum does not have a blood supply corresponding to that in bone, nor does it have haversian systems.

If we do not fully appreciate this difference, we might naturally expect the same response and the same processes of repair in cementum which occur in bone as a result of

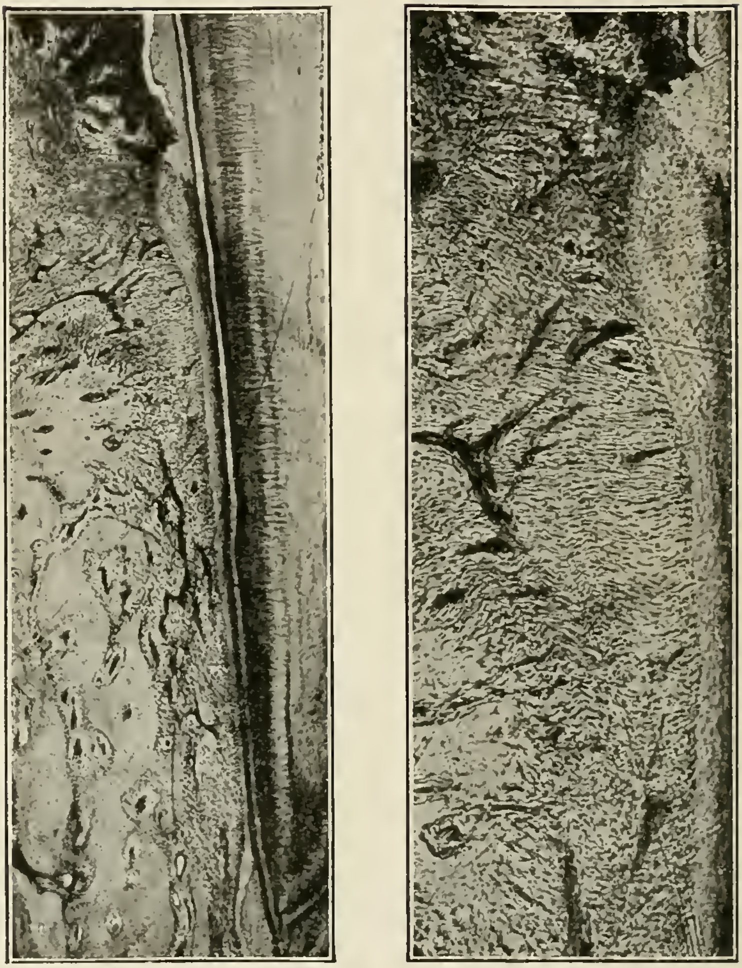


Fig. 1. Fig. 2.

Figs. 1 and 2. Normal peridental membrane. In Fig. 1 a portion of the tooth root is shown to the right, with the layer of cementum covering it. To the latter are attached the fibres of the peridental membrane, which pass across to the bone of the alveolar process. Fig. 2 is a higher magnification of a part of the field of Fig. 1, and shows the fibres more clearly. These illustrations should be compared with Figs. 3 and 4.

periosteal inflammations. If the periosteum is stripped from bone, the bone may become necrosed, in which case the activity of the cells within the bone will separate the necrosed area and exfoliate it. Similar changes cannot take place in the cementum because of the lack of circulation of blood. When the peridental membrane is stripped from the cementum by suppuration, the cementum becomes a dead tissue which cannot be exfoliated, except in its entirety by the removal of the tooth. It is sufficiently porous to become saturated with the products of suppuration, and remains as a constant irritant to the overlying tissue. Therefore, there is established a condition similar to that which would be caused by a piece of necrosed bone continuously held in position.

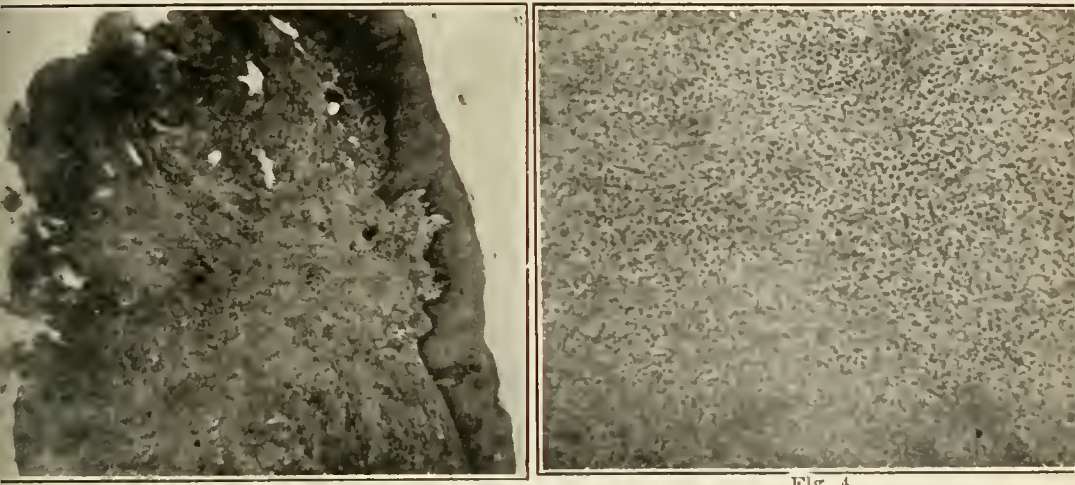


Fig. 3. Fig. 4.

Figs. 3. and 4. . Section of tissue overlying a deep pus pocket alongside the root of a lower cuspid tooth. Fig. 4 is a higher magnification from about the centre of Fig 3. Under normal conditions the bone of the alveolar process should be present in the lower half of Fig. 3. It will be noted that not only the bone, but all of the fibres of the peridental membrane have disappeared, being replaced by inflammatory tissue, with no possibility of re-attachment to the pus soaked cementum of the root. Such tissue and the pocket between it and the root afford a splendid opportunity for the entrance of organisms and their products into the circulation. This tissue was cut away by the writer September 29, 1913.

All of the investing tissues of the teeth—the peridental membrane with its specialized cells and fibres, and the bone of the alveolar process—must be considered as tooth appendages, since they develop with the tooth and always disappear subsequently to its extraction. Likewise, whenever there is a suppurative detachment of the peridental membrane from the cementum, the fibres of the peridental membrane and the alveolar process corresponding to the area of detachment are absorbed, as has been shown by microscopic examination of the tissue. (See Figs. 3 and 4.) This means that all suppurative detachments are permanent detachments; that a lesion is established which can not heal. It is on account of the fact that these absorptions of bone practically always occur, that radiographs are so important in diagnosis.

A careful study of the tissues involved in these chronic suppurations will show that the suppurative process cuts away the tissue from the very surface of the root, no soft tissue whatever remaining attached. The bone of the alveolus is practically never laid bare in cases of chronic pericementitis, but is covered by the soft tissue membrane, which presents a granulating surface to the root, and affords excellent opportunity for infective agents to enter the circulation.

The writer has observed a number of cases similar to those reported in the accompanying bibliography. A single one will be cited here: Mrs. J. E. E., age 35, was referred by Dr. Casey Wood, on October 9, 1913, with the following statement regarding her case: "Was first seen in June, 1907. She gave a history of 'granular lids' during childhood, from which she recovered. Since then she has had a number of attacks of conjunctivities which, at the time of first seeing her, showed as a chronic conjunctival catarrh with some enlarged mucus follicles. Bacteriological examination was practically negative. During the following six years the patient had the 'ups and downs' of an uncured simple folliculitis. In spite of both general and local treatment the patient did not get entirely well."

The writer's record of the mouth examination shows that five teeth had been previously lost as a result of peridental disease; pockets varying in depth from 3 to 9 mm. were found about eighteen of the remaining twenty-seven teeth, and pus could be pressed out about many. There were no alveolar abscesses. Six teeth were extracted and the remainder, after treatment, have been faithfully cared for by the patient. The patient stated in September, 1915, that she had had no discomfort with her eyes since the dental treatment. She was referred back to Dr. Wood for examination at this time and he reported

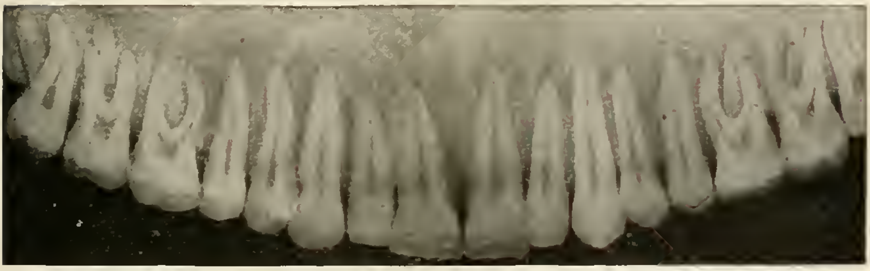


Fig. 5.

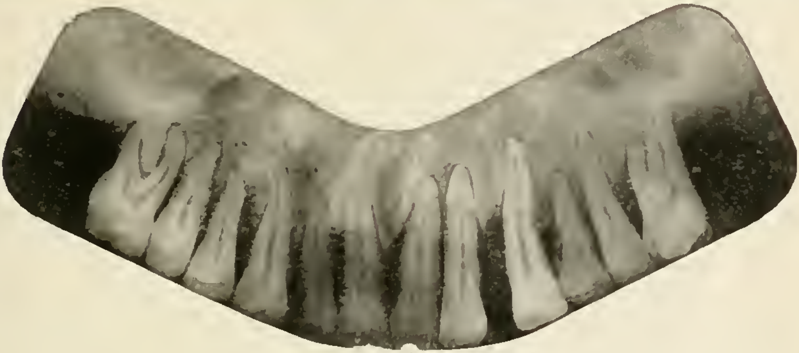


Fig. 6.

Figs. 5 and 6. Fig 5 is a panoramic radiographic view of the teeth and alveolar process of a normal upper jaw; Fig. 6 of one in which there had been extensive destruction of the peridental membranes and alveolar process by chronic suppurative pericementitis. In the mouth from which the radiographs for Fig. 6 were taken, the gum margins were in very nearly their normal positions about the teeth, there being little recession, and since the attachment to all of the roots had been destroyed as deeply as is indicated by the destruction of bone in the illustration, the area of inflamed tissue in this upper arch would amount to several square inches, constantly bathed with pus.

These illustrations were made under the writer's direction. A number of radiographs were taken on the ordinary small films and photographic enlargements were made of each (4x6 inches). The enlarged photographs were cut and patched together, and then reproduced by the engraver as a single illustration showing the entire dental arch.

that "all the symptoms had practically disappeared. The conjunctivae were smooth and normal in color, the palpebral thickening had much lessened and the eyes were entirely quiet. Vision with correcting lenses was 20/15 and Jaeger 1, with good range of accommodation in either eye." This case is particularly interesting because of the number of years during which the condition had been observed previous to dental treatment, and because two years have now elapsed without a return of the ocular symptoms.

If there is a chronic alveolar abscess, a sinus through which pus has pentrated the alveolar process and gum tissue, may be discovered, or an absorption of the bone may be made out by a digital examination. Whether the abscess be blind or with a sinus a radiograph will usually show a cavity within the bone, just beyond, or partially surrounding the end of the root. If there is a sinus the denuded root end may be felt with a suitable probe. All teeth which have been crowned, or which are discolored should be suspected of having chronic abscesses, and call for special investigation.

The pus pockets alongside the roots may or may not be discovered by the radiograph. These pockets frequently involve but one side of a root, or the same side of several roots, and if the destruction is only on the labial or lingual side, the density of the root may obscure the destruction of the bone of the alveolar process. If the bone between two teeth is destroyed, this should be clearly shown by the radiograph. These pockets are always open at the neck of the tooth and an instrument with a thin blade may be passed into them. Often pus may be forced out by pressure on the gum. Digital examination may reveal absorptions of the alveolar process about affected roots. The teeth involved may be loose, or they may remain firm, even though deep pockets are present along one side, or about one root of a multi-rooted tooth. The general appearance of the soft tissues is not a safe guide, as the outer surface of the gums and gingivae may appear normal, while the surfaces adjacent to the teeth may be much inflamed.

While no exact statistics are available, records of examinations of some hundreds of mouths led Dr. Thomas L. Gilmer to make the statement[41] a few years ago that chronic alveolar abscesses were present in 25 per cent of all mouths. The writer's own records fully support this statement. We may add to this another 25 per cent of adults who have chronic suppurations beginning at the gingival margins. While it is recognized that the resistance of most persons appears to be sufficient to protect them against such foci, it would seem reasonable to presume that these foci are in a measure at least responsible, when disorders present which are known to occur secondary to such foci. Is it not the duty of the oculist, in

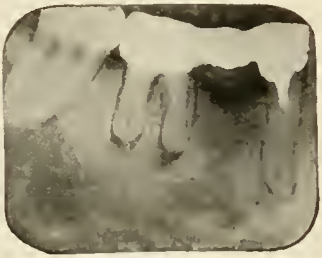


Fig. 7.

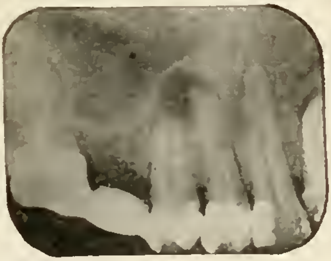


Fig. 8.

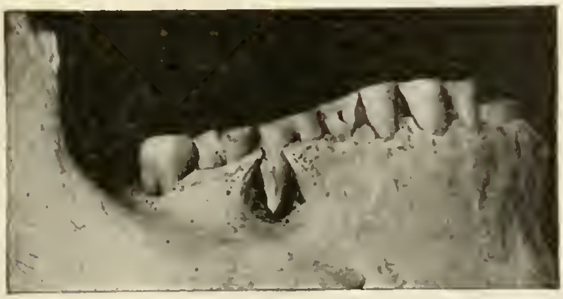


Fig. 9.

Figs. 7, 8 and 9. Three illustrations of chronic alveolar abscess. Fig. 7 is a reproduction of a radiograph showing "blind" abscesses on both roots of a lower molar. There were no symptoms whatever of these; they were discovered in the thorough routine examination of the mouth. Fig. 8 is a radiograph of a chronic alveolar abscess at the root of an upper first bicuspid; the floor of the maxillary sinus seems to have been bulged upward by the abscess. This abscess had a sinus discharging through the gum. Fig. 9 is a photograph of a lower jaw of an Indian skull, showing an extensive destruction of the bone as a result of a chronic alveolar abscess. This was doubtless of many years' duration, and while it serves to impress the menace of these pus cavities to the general health, it also is a token of the resistance which protected the individual and permitted him to continue his activities through so many years.

every case in which the eye is involved in such a lesion, to ascertain the condition of the mouth?

It is realized that present day dentistry is not doing what it should in keeping mouths free from infection, and it is doubtful if the dentist can be brought to appreciate the danger of mouth infections by other means than the observance of cases in which the cleaning-up of the mouth results in improvement or cure of the secondary effects. It is therefore of the greatest importance that there be closer co-operation not only in the examination and management of cases, but also in exchange of views which will lead to a better understanding, to the end that the joint service may be more direct and beneficial.

As a member of the dental profession, the writer wishes to express his appreciation of the symposium being conducted by the OPHTHALMIC RECORD, also of the opportunity to present the dental side of the subject.

BIBLIOGRAPHY.

In reviewing the subjoined list of articles, the following ocular diseases were noted as being caused by mouth lesions:

Accommodation, diminution or loss of, 21, 23, 24, 25, 38.
Amaurosis, 1, 3, 4, 5, 6, 7, 8, 9, 10, 14, 16, 18, 20, 21, 23, 25, 27, 35, 36, 37, 38.
Amblyopia, 21, 23, 24, 25, 38.
Blepharospasm, 21, 37, 38.
Cataract, 24, 28.
Chronic ophthalmia, 13, 25.
Conjunctivitis, 21, 24, 25, 28, 38, 40.
Corneal inflammations, 21, 38.
Exophthalmos, 21, 25, 38.
Extra-ocular muscles, spasms or paralysis of, 23, 28, 38.
Fatigue, 33.
Glaucoma, 21, 25, 38.
Hypermetropia, 28.
Iridocyclitis, 28, 35, 38.
Iritis, 25, 34, 38.
Kerato-scleritis, 24, 25.
Lagophthalmus, 21, 22, 25.
Mydriasis, 21, 24, 38.
Myosis, 38.
Neuralgia, 2, 29, 33, 35, 36, 37, 38.
Optic neuritis, 24, 25.
Orbital abscess, 23, 38.
Phlyctenular ophthalmia, 21, 25, 28.
Ptosis, 19, 25.
Sclerotitis, 22, 23, 25.
Strabismus, 21, 38.
Uveitis, 39.

[1] Case of Deafness and Lost Sight Cured by Proper Dental Treatment. Koecker. Amer. Jnl. Dental Science, 1842-3, p. 243.

[2] Painful Affection of the Eye Cured by the Extraction of a Tooth. Dental News Letter, 1847-48, p. 46.

[3] Amaurosis from Dental Irritation. Watson. Dental News Letter, 1851-52, p. 296.

[4] Amaurosis from Decayed Teeth. Excerpt. Tabez Hogg in London Lancet.—Dental News Letter, 1857-58, p. 160.

[5] Two cases of Amaurosis Depending on Dental Irritation. Case of Ptosis and Diverging Strabismus from Decayed Teeth. Henry Hancock in London Lancet.—Dental Cosmos, 1859-60, p. 50.

[6] Amaurosis Consequent on Acute Abscess of Antrum Produced by a Carious Tooth. S. J. A. Salter in London Lancet.—Dental Cosmos, 1862-63, p. 45.

[7] Loss of Sight from Decayed Teeth. H. T. Kempton in London Dental Review.—Dental Cosmos, 1862-63, p. 548.

[8] Amaurosis of the Right Eye Relieved by the Removal of the Filling from a Carious Tooth of the Corresponding Side and Its Final Cure by the Extraction of the Tooth. F. M. DeWitt in Amer. Jnl. Med. Sciences. —Dental Cosmos, 1868, p. 272.

[9] Amaurosis from Neuralgia of Dental Nerves. Alexander in Amer. Jnl. Med. Sciences.—Dental Cosmos, 1869, p. 161.

[10] Amaurosis from Dental Irritation. M. Delestre in Med. Times and Gazette.—Dental Cosmos, 1869, p. 329.

[11] Sclerotitis Relieved by Extracting a Carious Tooth. C. E. Wright in Western Jnl. of Medicine.—Dental Cosmos, 1870, p. 496.

[12] Sclerotitis Relieved by Extracting a Carious Tooth. Excerpt, C. E. Wright in Medical Record.—Dental Cosmos, 1870, p. 103.

[13] Chronic Ophthalmia Cured by Taking Out of a Tooth. Abstract. Blanc in Revue de Therapeut. Medico-Chirurg., Aug., 1871.—Dental Cosmos, 1871, p. 634.

[14] Amaurosis Cured by the Extraction of Fangs. Excerpt. Frühauf, Deutsche Vierteljahrschrift für Zahnheilkunde.—Dental Cosmos, 1873, p. 662.

[15] On the Kind of Teeth Usually Associated with Cataract. Jonathan Hutchinson in British Journal of Dental Science.—Dental Cosmos, 1875, p. 326.

[16] Amaurosis from a Carious Tooth. Excerpt, P. Lardier in L'Union Medical.—Dental Cosmos, 1875, p. 389.

[17] Inflammation of Eye Cured by Extraction of a Tooth. Davis, C. G., Dental Cosmos, 1876, p. 110.

[18] Amaurosis Following Dental Disease. Excerpt, Sirletti in Arch. Clin. Ital. dei Med. Condotti.—Dental Cosmos, 1878, p. 685.

[19] Sympathetic Ptosis from Decayed Teeth. Excerpt from St. Bartholomew's Hospital Reports in Lancet. Dental Cosmos, 1881, p. 497.

[20] Amaurosis from Diseased Dental Pulp. Marshall, J. S., Dental Cosmos, 1883, p. 425.

[21] On the Relations Between Dental Lesions and Diseases of the Eye. Abstract from paper by Henry Power. London Medical Press.—Dental Cosmos, 1884, p. 308.

[22] Lagophthalmus Due to Dental Irritation. Excerpt. S. J. Hutchinson in Med. and Surg. Reporter.—Dental Cosmos, 1886, p. 123.

[23] Diseases of the Eye in Relation to the Teeth. Stevens, E. W., Dental Cosmos, 1901, p. 108.

[24] Reflex Neuroses of Dental Origin as Manifest in Eye, Ear, Nose and Throat Diseases. McConachie, A. D., Dental Cosmos, 1903, p. 941.

[25] The Relation of Odontology to Ophthalmology and Otology. Allport, Frank. Dental Review, 1904, p. 305.

[26] Pathological Relations Between Diseases of the Teeth and of the Eye, Arising from Rheumatism and Gout. Peck, Edw. S.—Dental Cosmos, 1905, p. 103.

[27] A Case of Amaurosis Consecutive to the Extraction of a Tooth. From La Stomatologia, Milan, July, 1906.—Dental Cosmos, 1907, p. 875.

[28] Some Inflammatory Eye Conditions Due to Oral Sepsis. Goulden, C. From Proceedings Royal Society of Medicine, London, Feb., 1911.—Dental Cosmos, 1911, p. 216.

[29] Severe Pain in Eye Caused by Congested Tooth Pulp. Merritt, A. H. Dental Cosmos, 1911, p. 1445.

[30] Influence of Maxillary Changes on the Eye. Wright, Geo. H.—Dental Cosmos, 1912, p. 266.

[31] Connection Between Ocular Diseases and Inflammatory Conditions of the Teeth. Seydel, F., Breslau. From Deutsche Monatsschrift fur Zahnheilkunde.—Dental Cosmos, 1913, p. 106.

[32] Metastatic Ophthalmia Following Tooth Extraction. Dimmer in Wiener Vierteljahrs—Fachblatt.—Dental Cosmos, 1913, p. 959.

[33] Teeth and Their Relation to the Eye. MacWhinnie, A. M., New York Medical Jnl., Oct. 18, 1913, p. 755.

[34] Beaumont. British Med. Jnl., Sept. 26, 1913, p. 525.

[35] Two Cases of Ocular Diseases Associated with Pyorrhea Alveolaris. Tribbles, S. G., British Med. Jnl., April, 1914, p. 755.

[36] Report of a Case of Reflex Ocular Disturbance Due to Impacted Third Molar. Dutrow, H. V., Ophthalmic Record, May, 1915, p. 253.

[37] Carious Teeth as a Factor in Ocular Diseases. Ibershoff, A. E., Jnl. Ophthal. and Oto-Laryng., May, 1915, p. 141, and July, 1915, p. 209.

[38] Dental Amblyopia. Wood's Amer. Encyc. of Ophthalmology, Vol. V, p. 3817.

[39] Ocular Phenomena Accompanying Three Cases of Gastro-Intestinal Disorder. Hiram Woods. Ophthalmic Record, 1915, p. 547.

[40] Special Dental Pathology. Black, G. V., p. 370.

[41] Chronic Oral Infections. T. L. Gilmer. Archives Internal Med., 1912, p. 499.

A METHOD OF STUDY OF GENERAL DISEASES IN THEIR RELATION TO THE OCULAR STRUCTURES.

BY
M. MILTON PORTIS, M. D.
CHICAGO.

The finding of the source of toxic bodies which may have a harmful effect on the eye is one of the serious problems of medicine. Such ocular diseases as iritis, irido-cyclitis, the low-grade uveal diseases, ocular tuberculosis and syphilis, disease of the retina and optic nerve and of the ocular muscles all demand thorough studies of the patient's general condition where the cause of the ocular disease is not immediately obvious. A careful, thorough, systematic search will not infrequently ferret out the offender. It is not a very difficult matter to outline a scheme for such diagnostic procedures, but it requires a broad experience to properly interpret the findings.

In the search, one must be alert for all types of bacterial infections as well as those due to protozoan and parasitic forms. Again it is necessary to consider the various internal secretions which we know play an important role in the inception of toxic bodies on the one hand, or, on the other, may lead to the aggravation of an existing toxaemia.

After the sinuses, tonsils, teeth and the various constitutional diseases have been excluded, then a careful analysis of the blood, urine, stomach and bowel should be made. Besides the chemical, bacteriologic and X-ray study of the stomach and bowel, the question of a chronic appendix or gall-bladder disease should be carefully considered. The absorption of products of impaired motility of the bowel is one of the important sources of trouble.

In the examination for infections of the teeth, only a careful X-ray picture of every decayed tooth will reveal the possible trouble. It is important to emphasize that there may be no pain in teeth with chronic root abscesses. The best of dentists cannot, without the aid of the X-ray, make a proper diagnosis.

A thorough physical examination is of greatest value. The various diseases of the central nervous system must be excluded. Diseases of the respiratory tract and of the circulatory system are easily recognized. The genito-urinary system must be carefully examined and especial attention paid to chronic prostatic disease. Every case should have a blood Wassermann test and all suspicious cases should have a special study of the spinal fluid. A complement fixation test for gonorrhea should be made in all doubtful cases. A tuberculin test is of value in obscure cases. While a positive reaction is of questionable value, a negative reaction is always of real significance.

A twenty-four hour urine specimen, carefully collected, should receive a thorough study in each case. Besides the search for albumen, sugar and casts, an accurate determination should be made of the total acidity, the ammonia content, acetone, indican and the ethereal sulphates. Such an analysis will not only help to determine the source of a toxaemia but will also be a measure of its degree.

The typical cases of hyperthyroidea are commonly recognized. The masked cases, however, are frequent, and usually are not discovered. Hyperthyroidism may be the origin of a wide group of disorders of metabolism, which in turn are the source of a severe toxaemia.

Hypothyroidism, with its typical train of symptoms and metabolic disorders, is easy of recognition. Anomalies of the secretion of the parathyroid, adrenal and pituitary all must be carefully searched for and their important influence in the body chemistry fully considered. With the recent development of chemical and biologic methods, much light has been thrown upon these disorders.

THE FUNDUS LESIONS IN THE VARIOUS FORMS OF NEPHRITIS.

BY

ALBERT E. BULSON, JR., M. D.

FORT WAYNE, INDIANA.

This paper, presented by invitation, is intended to be a digest of what has been presented by numerous authorities, but more especially to incorporate some of the opinions that recently have been expressed by the writer and others concerning the early diagnostic retinal signs of nephritis and arteriosclerosis.

However, in the discussion of this subject we may, with all propriety, confine ourselves to a consideration of the fundus lesions in two forms of Bright's disease, the acute and chronic. There is no occasion to separate chronic Bright's disease into distinct types, as *McCrae*,[1] *Dieulafoy*,[2] and others have pointed out that neither the parenchymatous nor the interstitial nephritis ever exists alone, and every case of chronic nephritis should be called Bright's disease whether the glandular or vascular changes predominate. Neither is there occasion to separate the fundus lesions of chronic Bright's disease from those of general arteriosclerosis, as the theory advanced by *Sutton and Gull*[3] that the disease is due to a local form of general arteriosclerosis seems to have been accepted generally. The theory has been discussed favorably by *Herrick*,[4] *Edwards*,[5] *Kelly*,[6] *Roderer*,[7] and many others. *Ophüls*[8] gives an acceptable opinion when he says that he believes that chronic nephritis should not be considered as a disease of the kidneys alone, not even primarily, but a disease of the cardio-vascular system, and that there is always a more or less widespread arteriosclerosis, hypertrophy, and dilatation of the heart.

Whatever the form of Bright's disease the ophthalmoscopic picture is essentially the same in any of the so-called types of chronic nephritis now recognized as local forms of a general arteriosclerosis, and without the arteriosclerotic changes is the same ophthalmoscopic picture as presented in acute nephritis. In any case we are dealing with the effect of toxic substances in the blood which, in the process of elimination, are brought into intimate contact with the vascular system of the fundus of the eye and induce endo-vascular and parenchymatous changes in the retina. The destructive effect of circulating poisons that act upon the vessels of the kidneys and retina need not be ascribed to "selective action," but, as pointed out by *Oatman*,[9] to the anatomic fact that both structures are supplied by a terminal system of vessels and the evils of obstructed circulation cannot be averted by collaterals.

The fundus alterations are very largely a question of degree or stage of progress rather than a question of distinctive type of retinal alteration to conform to a certain form of kidney pathology. All are evidence of the action of a toxin in the blood stream which induces inflammation of the inner layers of the retina and subsequently vascular degeneration.

While fundus lesions may occur in any form of nephritis they are more frequent in chronic nephritis and comparatively rare in the acute nephritis of pregnancy, scarlatina, and other exanthemata, and from certain poisons such as lead. The lesions generally are confined to the retina, though as a complication of the retinitis we may have an implication of the choroid which shows itself as a diffuse chorio-retinitis.

Renal retinitis occurs at all periods of life, but is most frequent between the ages of thirty and sixty years. *C. S. Bull*[10] reports a case in a child five years of age, and *de Schweinitz*[11] reports a case in a child of nine years. Out of 66 cases of renal retinitis *Weill*[12] reports that 41 occurred before forty years of age, and 25 after; 8 occurring between sixteen and twenty years. *Nettleship*[13] has collected 80 cases of interstitial nephritis in patients under twenty-one years of age; in 60 of these cases a post mortem examination was made. Retinitis or multiple hemorrhages were observed in 31 of these cases. In 37 cases no ophthalmoscopic examination is recorded; 18 of these cases were under the age of thirteen years.

According to *Parsons*,[14] nephritic retinitis occurs about twice as often among men as among women, and in a collection of 935 cases of acute and chronic types he found the average ratio to be 22.4 per cent. This percentage represents mostly cases of well developed retinitis but fails to include a much larger number in which minor vascular changes existed. *Weill*[12] says that of 194 patients with Bright's disease examined ophthalmoscopically, 66 showed retinitis, and in 21 of these cases the retinal condition first revealed the nephritis.

As regards sex, *Parsons*[14] says that males are more often affected than females in adults; females more often than males in the young. He cites 180 cases in which 68 per cent occurred in males and 32 per cent in females, and quotes *Nettleship*,[13] who reports 80 cases in patients under 21 years of age in which 64 per cent were females and 36 per cent were males.

The sudden onset of the retinitis which may accompany *acute* Bright's disease probably is accountable for the fact that the very early retinal changes in this form of retinitis are not observed through lack of opportunity on the part of the examiner to inspect the fundus during the incipient stages of the disease. It is presumed that if these cases were examined critically early in the course of the acute nephritic disturbance the ophthalmoscopic picture would be quite similar to the picture presented as early manifestations of the chronic type of the disease, but without the arteriosclerotic changes so prominent in the slower developing chronic form. The rapidity with which the retinal changes progress is due to the fulminant character of the toxic process, and, as stated by *Oatman*,[9] the differences between chronic and acute albuminuric retinitis consist in etiology, development and course rather than in ophthalmoscopic findings. The arteriosclerotic changes of chronic retinitis are not found in the acute disease, but its angiopathic character is suggested by the lesions presented.

Concerning the frequency with which acute albuminuric retinitis occurs, *Silex* [15] estimates that there is one case for every 3,000 pregnancies. Among 935 pregnant women who suffered with kidney lesions, *Adam* [16] saw 209 cases of retinitis. Among these the star figure of albuminuric retinitis was quite uncommon. Of 92 cases of eclampsia, 44 complained of disturbances of vision, but only four showed evidences of retinitis. *Magruder* [17] reports a case in which albumen was not found in the urine until three days before abortion was done for the blindness.

The albuminuric retinitis of pregnancy usually occurs in the second half of pregnancy, although it may appear at any time, and as a general thing vision is impaired permanently. *Silex* [15] found but three out of thirty-five cases that regained normal sight, and *Howe* [18] states that when retinitis develops in the seventh month of pregnancy, and abortion is not induced, permanent blindness may be expected. On the other hand, the mortality after albuminuric retinitis in pregnancy is less than in any other form of nephritis. *Nettleship* [13] records twenty-two cases of retinitis during pregnancy of which he knew of but one that died within two years, and two-fifths of the number were known to have lived more than two years. Occasionally an acute form is followed by a rapidly progressive chronic retinitis. In such cases chronic nephritis may have preceded the pregnancy. The cases of albuminuric retinitis occurring after the acute exanthematous fevers give a less favorable prognosis, as many of them pass into chronic interstitial nephritis.

The ophthalmoscopic picture may present all of the various stages of hyperemia, exudation and hemorrhage. The optic disc may be, and usually is blurred, especially at the edges, and markedly congested. In various portions of the retina may be seen milky patches of exudation which more or less obscure the underlying vessels. Hemorrhages, occurring on the disc and in the retina, are common, and *Weeks*[19] states that there may be detachment of the retina from shrinkage of the vitreous body which must have preceded the detachment. The escape of serum from the vessels produces the edematous or white patches, and these white patches occasionally assume a stellate appearance about the macula, though far less frequently than the same appearance occurs in the chronic form of the kidney lesion. While the blood vessels are turgid and the veins slightly tortuous, the arteries are almost unchanged and present no structural changes in their walls, and hence no arteriosclerotic appearances so characteristic of the chronic type the onset of which is less rapid. The retinitis is purely exudative and an evidence of toxemia. The exudation and hemorrhage that occur are not a result of obstruction in the vessels, but of a weakening of their walls by the presence of poisonous substances in the blood.

The effect upon vision will depend entirely upon the extent and location of the exudative changes. Lesions near the macula or detachment of the retina produce great impairment of vision, and *Holden*[20] reports a case in which the only retinal change at first was merely a trace of edema about the macula, and he says that the reduction of vision to recognition of hand movements seemed to depend on retrobulbar neuritis. Usually the patient complains of a fog before the eyes, and sometimes very great impairment of sight occurs as a direct result of hemorrhages at the macula. Total loss of vision from the retinal lesion alone is rare, as sudden blindness in both eyes means uremic amaurosis which is central in origin.

It must be remembered that it is possible to have an ophthalmoscopic picture closely resembling albuminuric retinitis, due to other causes, and numerous writers have mentioned the similarity of appearance of albuminuric retinitis to the retinitis of syphilis and to choked disc from intracranial lesions. Hence, in making a differential diagnosis the fundus lesions must be considered in connection with the clinical history, the blood pressure, a careful chemical and microscopical examination of the urine, and perhaps an examination of the blood which should include a Wassermann.

In considering the fundus lesions of *chronic* Bright's disease it is assumed, as has been pointed out by *Ophüls*[8] and others, that it is difficult, if not impossible, to draw any distinct line of demarcation between general arteriosclerosis and chronic interstitial nephritis, for while clinically one or the other may seem to be of most importance, autopsy seems to show that the two conditions are present together, and that they both come under the head of arterio-vascular change, due to some toxin. It is equally difficult to say whether the eye lesions should be considered as a manifestation of a general arteriosclerosis, in which the nephritic symptoms are to be more or less pronounced, or in which the nephritic lesion is secondary and of minor importance, inasmuch as the early retinal lesions are common to both types of cases.

High blood pressure must be considered a part of the clinical picture, and invariably is associated with the fundus lesions of chronic Bright's disease or general arteriosclerosis. This association has been discussed by *de Schweinitz*,[11] *Barker and Haines*,[21] *Black*,[22] *Jackson*,[23] and many others. *Barrett*,[24] in discussing the ophthalmoscopic picture of high blood pressure, relates a case of a woman of twenty-three years with a blood pressure of 240 mm. of mercury and entire absence of ophthalmoscopic changes, who many months later showed abundant evidence of albuminuric retinitis, which would seem to indicate that the retinal lesions occur only after persistent high blood pressure. The theory that hypertension may precede the general arterio-sclerotic changes, which are a part and parcel of chronic Bright's disease, seems borne out by the findings of *Ophüls*[8] who considers the increase in the blood pressure as due to toxic influences which eventually produce a diseased condition of the walls of the blood vessels, a view that also is entertained by *Jones*.[25] In support of this view *Widal*[26] considers the retinitis as being uremic, and *zur Nedden*[27] accounts for an involvement of the retina in nephritis through cytotoxins developed in the retina. *Shieck*,[28] in discussing renal retinitis, says that he has found marked changes in the nervous elements of the retina but no trace of alteration in the blood vessels, and *Shiba* [29] contends that the condition is due to some alteration in the state of the blood.

In view of the fact that some of the earlier fundus lesions of chronic Bright's disease may precede the presence of albumen and casts in the urine, some authors have designated them as pre-albuminuric.[9] These very early fundus manifestations, however, invariably are associated, as has been stated, with persistent high blood pressure and other cardio-vascular changes which together contribute to a clinical picture which indicates approaching kidney degeneration. If these slight but significant retinal alterations which precede albuminuric retinitis are discovered, the progress of the disease may be arrested or at least delayed.

These early fundus lesions, to quote from a former paper by the writer,[30] consist in almost indistinguishable small white or milky-colored dots of exudation, few or perhaps many in number, which appear in the neighborhood of the disc, and most frequently in the macular region; the haziness and often delicate hyperemia of the disc; isolated faintly milky colored areas in the retina, due to edema; the beaded appearance of some of the larger arteries from thickening of the walls and distention of the smaller terminal veins; and, as important as any indication, the appearance of relative scotomata, more often central, either with or without visible retinal alteration. Any two or all of these lesions may co-exist, and any one or all may exist with but little or no alteration in the vision as detected by the patient. Usually, however, the patient suffers from slight fogginess of vision, or mild retinal irritation, the latter manifested by slight photophobia or retinal fatigue which prompts him to seek relief, or, as is frequently the case, the condition of the retina and its effect on vision are discovered by accident, as in the routine examination for glasses.

The bending of the veins where the arteries cross, especially in the lower periphery where the secondary and tertiary branches may cross and bend the veins beneath, has been mentioned by *Greenwood*,[31] who also emphasizes the fact that in addition to the bending of the veins there also should be evidence of a slight dilatation of the vein on the distal side of the crossing, showing slight compression, and also some loss of arterial translucency as shown by the inability to see the underlying vein as it should be seen in the normal condition, with also a broadening of the light reflex of the artery. He also calls attention to the hollowing of the optic disc, not amounting to a cupping, but with the vessels taking on the merest sloping dip from the edge toward the center, and this is confirmed by *Lamb*,[22] who also calls attention to the obscuring of the small vessels of the disc itself by the beginning edema.

Weeks,[19] in describing arteriosclerosis of the retinal vessels, mentions the delicate white lines at the borders of the arteries in the greater number of cases, loss of transparency of the vessels, and the appearance of hemorrhage and exudates. In discussing albuminuric retinitis he divides the condition into two classes. First, those cases not preceded by thickening of vessel walls, which will include cases occurring as a result of acute parenchymatous nephritis in which the changes in the kidneys precede those that occur in the retina; second, those cases in which the hemorrhage and exudation are preceded by changes in the walls of the vessels (arteriosclerosis), and in this class are those cases accompanying chronic interstitial nephritis in which the changes in the retina may precede the appearance of albumen and casts in the urine.

In a classical description *de Schweinitz*[11] says that alterations in the retinal vessels are caused by chronic nephritis and general arteriosclerosis, and he describes three early indications; first, a markedly corkscrew appearance of certain arterial twigs; second, a flattening of the vein where it is in contact with an artery; and third, an appearance of the nerve head often described as congested. He calls special attention to the increase of the blood pressure as an early symptom accompanying these fundus lesions, and says that hypertension is not infrequently a sign of beginning renal or vascular degeneration.

The fact that these early retinal lesions may disappear under favorable conditions, only to reappear later in more advanced form, is mentioned by *Nettleship*[13] and has been noted by numerous ophthalmologists of experience. However, the significance of the lesions from a diagnostic and prognostic standpoint should not be under-estimated. The disappearance of the lesions is due to a change in the mode of life, with improved hygienic and dietary regulations, or a combination of the two associated with appropriate therapeutic measures which increase the resisting power of the patient to the pernicious effects of the toxins. The fact that the lesions are due to what is known to be a progressive disease and that they occasionally do disappear under improved conditions shows the importance of detecting the lesions in their incipiency, recognizing their significance, and placing the patient under appropriate care.

As the disease progresses the fundus lesions become more pronounced. The optic nerve takes on a brick-red color, the retinal arteries pursue a straight course, their axial light streak becomes very bright and well defined, producing the effect known as "silverwire arteries," indicative of thickening and hardening of the vessel walls. This sclerosis of the arteries is indicated further by the lack of translucency of the vessel walls and the manner in which they indent underlying veins. The veins become visibly distended and tortuous, and *de Schweinitz* [11] in particular, calls attention to the corkscrew appearance of the terminal venous twigs, and especially those which are immediately around the disc; and *Oatman* [9] states that the characteristic indentation and obscuration of the vein by an over-crossing artery is positive ophthalmoscopic proof of retinal arteriosclerosis and precedes the more marked signs of albuminuric retinitis. He also lays emphasis on the necessity of obtaining this early information through the use of the ophthalmoscope with a widely dilated pupil as affording indications which should result in the adoption of the means of preserving life. Hemorrhages, sometimes punctate and minute, but more often radiating or flame shape, are more or less common. *Loring* [33] reports cases in which the only ophthalmoscopic sign was a single small spot of hemorrhage or exudation, without a trace of vascular disturbance upon the disc or surface of the retina.

As might be expected from any obstruction to circulation in a terminal system of vessels, the progress of the disease increases the number and extent of the lesions. The exudates, which formerly were minute and almost indistinguishable milky white dots, now become larger and very conspicuous, and often assume a stellate or star-shaped arrangement around the macula. Near the disc these white patches have a tendency to coalesce and the papilla then becomes the center of what appears to be an enormous plaque of exudation. The vessels are white-bordered, sometimes entirely obliterated, and there are numerous extravasations of hemorrhage in the retinal tissue. The peculiar star-shaped arrangement of the exudates around the macula is considered almost pathognomonic of Bright's disease, though occasionally seen in other forms of retinitis. Thus *Oatman*[9] says that an ophthalmoscopic picture identical with that seen in albuminuric retinitis has been observed in syphilitics whose urine contained neither albumin nor sugar, and he quotes *Knapp*,[34] *Haab*,[35] *and Schaffels*[36] as making similar observations. Here again the differential diagnosis, in view of negative urinary findings, depends upon the clinical history and the results secured from the blood pressure apparatus, and a thorough blood examination, not omitting a Wassermann.

Usually the fundus picture presenting these extensive alterations indicates that irreparable vascular destruction already has occurred and a fatal termination is impending. In the marked type of albuminuric retinitis the prognosis as to life is considered unfavorable. *Bull*[10] says that the duration of life following the development of typical albuminuric retinitis in the majority of cases is not to exceed two years, and a great many of them die earlier. He cites 103 cases with a death rate of 87 percent within two years, and over 50 percent death rate within one year. Of 627 cases collected by *Parsons*[14] over 80 percent died within two years and nearly 60 percent within one year. *James*,[37] in reporting a series of 24 cases, says that the prognosis always is unfavorable, as the cases often get rapidly worse and die in a few weeks. A few temporarily improve, but rarely live more than a year. *Taylor*[38] has been struck with the short duration of life in some of his cases and the long duration in others. He has seen a patient die within a few hours after the discovery of retinal changes, and another living after five years. *Ormond*[39] reports a case of retinitis with albuminuria in which the retinal lesions had called attention to the general disease ten years before. The vascular changes had been marked throughout, but there was little evidence of toxemia and the renal function was still fairly good. The rapidity with which the disease may progress after the discovery of fundus lesions is evidenced by the case, reported by *Libby*,[40] of rapidly fatal nephritis in which the ophthalmoscopic examination had given the first indication of the disease. Corrected vision was still good, but patches of retinal edema were found in each eye outside the macula peripherally. Nineteen days later there were some small retinal hemorrhages, edema of the papilla, and reduced vision. The patient had become entirely blind before death two weeks later.

The impairment of vision in the advanced type of retinitis of Bright's disease depends upon the nature and location of the lesion rather than upon the severity of the general inflammation or gravity of the disease. If the macular region escapes there may be extensive changes in other portions of the retina without interference with central vision. Occasionally a patient having extensive edema and degenerative changes in the retina will possess practically normal central vision, though this is a rare exception. Usually there is a certain amount of blurring, and the visual fields indicate the areas in which the greatest inflammation or destruction is occurring. Relative scotomata, varying in shape and size and corresponding to the milky patches seen in the retina are an early as well as a late manifestation, but are especially significant when seen as an early manifestation accompanying persistent high blood pressure.

Sudden blindness in both eyes means uremic amaurosis, whereas if the blindness occurs in one eye only it may indicate either retinal detachment or closure of the central artery of the retina. It should be remembered, however, that these fundus lesions are but a part of a clinical picture which becomes diagnostic when the findings from a blood pressure apparatus, an examination of the heart, and a chemical and microscopical examination of the urine are considered along with the eye lesions. The earlier the diagnosis can be made the more probable it is that good results will be secured from treatment, and as the fundus lesions often antedate any signs other than a high blood pressure which may not be discovered until after the fundus lesions have been detected, a critical and painstaking ophthalmoscopic examination through a widely dilated pupil may tell the story of prolonged health for the patient.

BIBLIOGRAPHY.

[1] McCrae, Osler's Mod. Med., 1909.
[2] Dieulafoy, Text Book of Med., 1911.
[3] Sutton and Gull, Med. Chir. Trans., 1872.
[4] Herrick, Osler's Mod. Med., 1909.
[5] Edwards, Text Book of Med., 1909.
[6] Kelly, Prac. of Med., 1909.
[7] Roderer, Jour. of A. M. A., Apr. 22, 1911.
[8] Ophüls, Arch. Int. Med., Feb., 1912.
[9] Oatman, Diag. of the Fundus Oculi, 1913.
[10] Bull, Am. Jour. of Med. Sciences, 1897. Trans. Am. Oph. Soc., 1886.
[11] de Schweinitz, Trans. Am. Oph. Soc., 1896. Oph. Rec., Aug., 1906.

[12] Weill, Ann. d'Ocul., Vol. CXLIX.

[13] Nettleship, Royal Lond. Oph. Hosp. Rep., Vol. XV and Vol. XVI.

[14] Parsons, Path. of the Eye, Vol. IV, 1908.

[15] Silex, Berlin Klin. Woch., 1895.

[16] Adam, Am. Jour. Med. Sciences, Dec., 1914.

[17] Magruder, Ann. of Oph., Vol. XXIII.

[18] Howe, Am. Jour. of Oph., 1885.

[19] Weeks, Treat. on Dis. of Eye, 1910.

[20] Holden, Trans. of Sect. on Oph. of A. M. A. 1914.

[21] Barker and Haines, Am. Jour. of Med. Sciences, 1909.

[22] Black, Trans. of Sect. on Oph. of A. M. A., 1908.

[23] Jackson, Colo. Med. Jour., Feb., 1910.

[24] Barrett, Australian Med. Jour., 1910.

[25] Jones, Deutsch. Arch. f. Klin. Med., Vol. XCIV., 1908.

[26] Widal, Ann. d'Ocul., Vol. CXLIII, 1910.

[27] zur Nedden, Arch. for Augenh., Vol. LXXIII, 1909.

[28] Shieck, Wein. Med. Wchnschr., March 14, 1908.

[29] Shiba, Klin. Monatch. f. Augenh., Apr., 1908.

[30] Bulson, Jour. of A. M. A., Sept. 21, 1912.

[31] Greenwood, Trans. Sect. on Oph. of A. M. A., 1904. Trans. Am. Acad. Oph. and Oto-Lar., 1912.

[32] Lamb, Trans Am. Acad. Oph. and Oto-Lar., 1912.

[33] Loring, Text Book of Ophthalmoscopy, 1891.

[34] Knapp, Arch. f. Oph., Vol. IV.

[35] Haab, Norris and Oliver, Vol. IV.

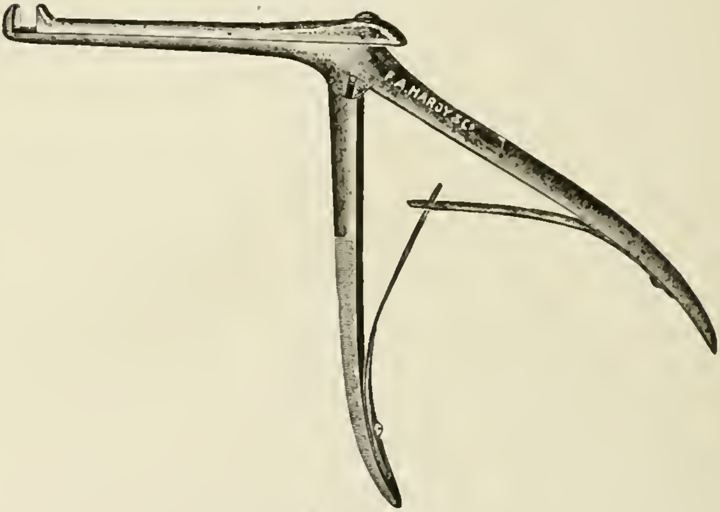
[36] Schaffels, Deutsch Med. Woch., 1897.

[37] James, Oph. Year Bk., 1913.

[38] Taylor, Oph. Year Bk., 1913.

[39] Ormond, Oph. Soc. of the U. K., Vol. XXXIII.

[40] Libby, Oph. Year Book, 1912.



Prince's Lachrymal Sac Punch.

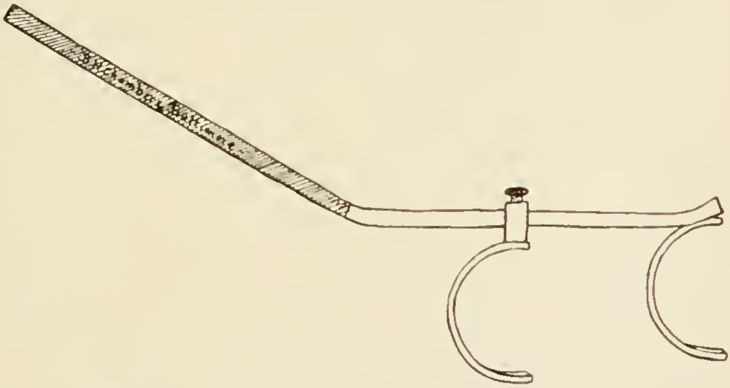
A New Nasal Punch—Dr. A. E. Prince, of Springfield, Ill., has devised a punch for cutting away a portion of the nasal wall of the lachrymal sac, together with the end of the lead strip. The illustration indicates the type of punch used. For the original article see The Ophthalmic Record for August, 1915, pp. 414.

A TRIAL-CASE ACCESSORY.

BY
J. W. DOWNEY, JR., M. D.
BALTIMORE

There are a large number of persons with hair-trigger nervous systems in whom even a quarter of a diopter decrease of sphere with the same increase of the cylinder, or *vice versa,* in their refraction, may mean the difference between comfort and discomfort. Also, it is by no means always easy for these patients to decide which is the better of two sphero-cylindrical combinations when the first must be removed from the trial-frame and the second adjusted in its place.

Having determined the refraction as accurately as possible, it is my custom to use a .25D and a .12D crossed cylinder as a final test, and should there be any question, the combinations, indicated by the crossed cylinder, are fitted into the carrier here illustrated, by which means the two sets of lenses may be shifted quickly and without confusion, before the eye.



Lens Carrier:—The cells are slotted to carry two lenses and the lower cell may be adjusted in any position desired.

Being unable to find such a carrier on the market I devised the one here shown and have now used it for a year or more with increasing satisfaction, not only for the purpose herein named, but in several ways suggested by its serviceableness.

DIONIN IN THE TREATMENT OF VERNAL CATARRH.

BY
GEORGE SWIFT, M. D.,
SEATTLE, WASH.

Saemisch first called attention to the spring as the season of vernal catarrh. In 1903 Herbert (1) called attention to the presence of eosinophiles in the secretion in cases of this type. Brown Pusey, in 1911, (2) corrborated these findings and called attention to pollen as a possible etiological factor. Several writers have mentioned the dilatation of the lymph spaces in this disease.

In the treatment of vernal catarrh the use of ichthyol, zinc washes, mild astringent lotions, curettage, cautery, compresses of various sorts and many other remedies including glasses of various tints have been used.

The chief subjective symptom is the excessive itching. The chief objective symptoms noted by the parents are the drooping of the lids and the dullness of the cornea. These three symptoms respond readily to treatment of Dionin solution 5 per cent instilled three times daily. At first the reaction is terrific, much more so than in any other cases in which Dionin is used or even in normal eyes. I believe this to be due to the dilatation of the lymph channels. The secretion is more marked for a few days and then subsides as in the use of Dionin in other conditions. If Pusey's theory of the presence of pollen is accepted, one can believe that the excessive flow of secretion after Dionin tends to relieve the tissues of the pollen or the congestion due to pollen.

The gelatinous appearance on the cornea readily disappears in mild cases and flattens rapidly in more severe types; the plaques on the conjunctiva flatten in early cases but do not become entirely obliterated.

I have not seen Dionin mentioned as having been used in these cases, but it probably has been used by others. I was afraid at first to use it but the results were so marked that I have used it for the past three years practically to the exclusion of all other remedies and believe it should be given in every case.

(1) Herbert: Preliminary note on Pathology and Diagnosis of Spring Catarrh. British Medical Journal, 1903, II, 735.

(2) Pusey: Vernal Conjunctivitis and Eosinophile Cells. Journal A. M. A., 1911, LVI, 952.

Eosinophile Cells and Pollen in Vernal Catarrh. Journal A. M. A., 1911, LVII, 1207.

REPORTS OF SOCIETIES

CHICAGO OPHTHALMOLOGICAL SOCIETY.

Richard J. Tivnen, President.

October 18, 1915.

Retinitis Proliferans Involving Both Eyes.

Dr. E. K. Findlay reported this case. He said: The patient, male, aged 26, came under my observation last May with the following history: In December, 1914, he consulted an optician on account of blurring of the sight of the right eye and received a prescription for glasses. A short time before I saw him he began to have blurring of vision of left eye and found difficulty in reading. Examination showed a slight divergence of the right eye. V.R. 2/60, V.L. 6/15. In the right eye the ophthalmoscope showed areas of hemorrhage and the formation of new tissue of a bluish-white color, with new formation of vessels. In the left eye the media were clear but large retinal hemorrhages, more pronounced in the region of the disk, could be seen. A diagnosis was made of retinitis proliferans or retinitis hemorrhagica hyperplastica of right eye and hemorrhagic retinitis in the left. A careful physical examination was made with negative results. There were no renal changes, blood pressure normal, Wassermann negative, and no reaction to the tuberculin test. The patient appeared in perfect physical condition. Treatment has failed in checking the course of the disease and we find at present the vision is reduced to R. E. 1/20, L. E. 3/60, with the formation of connective tissue in the left eye also; with certain areas of new blood vessels.

This condition was first mentioned by MacKenzie in 1864 and the name of retinitis proliferans was given it by Manz in 1867. Numerous cases have been examined microscopically, showing the masses in the vitreous are connective tissue with newly-formed blood vessels, and in most cases there is hypertrophy of Mueller's fibers.

Nearly all cases resulted from hemorrhages in the retina, though some authors deny the necessity of hemorrhages. In this case hemorrhages undoubtedly preceded the disease. Hemorrhagic retinitis is comparatively common, but this condition is seldom seen, so there must be another factor in producing this new tissue. In nearly all the clinical cases there was some local or general circulatory disturbance. This case presents the typical picture of retinitis proliferans with the etiology obscure. There have been no inflammatory changes as iritis or cyclitis. Both eyes are involved and the disease has been progressive. Undoubtedly some toxic agent has caused a local disturbance of the retinal vessels and produced a so-called plastic retinitis.

Dr. Findlay, in answering questions, stated that the sinuses had been examined carefully with negative results, but no X-ray examinations had been made or pictures taken. Koch's tuberculin had been administered, up to 2 mg., without any reaction. Tuberculin treatment had been given for over six weeks, with no results. There was no hemorrhagic diathesis to account for the condition.

Dr. Suker stated that a condition of localized hemophilia might affect the retina. He himself had a case some years ago which showed a localized hemophilia in other portions of the body, but not in the retina. Such being the case, it may be possible that these hemorrhages into the retina in this case are of the hemophilia type.

Golf Ball Accident.

Dr. A. N. Murray: A year ago the patient suffered an injury to the left eye, occasioned by a golf ball striking the eye-glasses which he was wearing. The upper lid was severely cut in a number of places; there was a ragged opening through the cornea near the nasal limbus, with prolapsed iris, and an opening into the sclera three or four mm. long, about three mm. from the nasal limbus. He abscised the protruding portion of the iris. A week later a piece of glass, two mm. long and about one mm. thick was found embedded in the cornea, just below the center and flush with the surface, having been present this length of time without having produced any symptoms whatsoever. In the meantime the lens had become totally cataractous, flocculent lens matter almost filling the anterior chamber. In attempting to remove the glass it prolapsed into the anterior chamber, and was extracted by lifting it up on the point of a keratome and seizing it with an iris forceps inserted through its wound in the cornea. Its position was determined by oblique illumination and contact with the keratome. The cataract absorbed in five or six months, when it was possible to see clear inside of the capsule, owing to its attachment to the inner surface of the cornea at the site of the perforation. The attachment of the anterior capsule to the cornea was severed with a Knapp knife-needle, and the posterior capsule needled so that a good opening was secured. Vision of 20/24 is obtained with a plus 10 sphere. The patient is now wearing this sphere; with this very unusual combination he apparently obtains binocular vision. This is not constant, however, owing to a convergent strabismus of the injured eye, which developed soon after the injury and is still present part of the time. At first marked diplopia was present, it is now noticed only when the left eye converges. A very fine splinter of glass, visible only with the loupe and oblique illumination, is still embedded in the corneal tissue at the nasal limbus, with exudate behind it, but the condition apparently causes no irritation. It does not seem wise to remove it at present. The corneal scar is very irregular. There is no astigmatism present, although there was quite extensive scarring about the cornea.

In answer to a question the essayist stated that there is no involvement of the ciliary body.

DISCUSSION. Dr. W. H. Peck, in discussing the paper of Dr. Murray, said he thought it was advisable to have an X-ray picture taken when splinters of glass had penetrated the eyeball, as thereby unsuspected pieces might be found, the pieces of glass in some cases being opaque to the Roentgen ray, according to their composition and size, and distance from the piece of glass to the X-ray plate. Unfortunately glass is not magnetic and so not amenable to removal by the magnet as in the case of iron and steel. Even if pieces of broken glass are located in the interior of the eye, it is a very serious problem to remove them and frequently impossible, as in the case of other non-magnetic bodies, such as copper, lead, wood, etc.

Dr. Suker asked whether, with the great difference in refraction and having binocular vision, an attempt had been made to determine whether there was superimposition of the images.

Dr. Murray replied that no such an attempt had been made.

Dr. Suker inquired if it might not be possible that the patient has a suppression of one or the other image, which might thereby simulate binocular vision.

Dr. Murray responded that he had simply assumed that the patient had binocular vision.

Dr. Murray in response to another question stated the patient does not notice that he sees double when fatigued.

Dr. H. S. Gradle said that it did not seem possible that this patient could have true binocular vision, with a dioptric difference at least of 12 diopters in the two eyes. In such a case binocular vision would not be likely to be present, owing to this dioptric difference and to the consequent difference in the size of the retinal images, but stereoscopic vision might be present, and the optical axes might be parallel.

Dr. Murray, in answering questions regarding binocular vision, said he had not made all the tests possible to determine this matter; that the patient did not have any difference in the size of the retinal images; that these various tests with reference to binocular vision will, however, be made by him. With the exception of this one sliver of glass, there does not seem to be any glass in eye now. There has been no photophobia nor irritation during the entire year. No effort has as yet been made to determine whether the patient has accurate depth perception.

Dr. Willis O. Nance said that five years ago he had reported to this society a case of injury to the eye by a broken spectacle lens. The literature at that time showed only two or three such cases. They have been, however, reported somewhat more frequently since then. Injuries to children from broken glass lenses seem to be exceedingly rare, considering the number of spectacles worn. The speaker inquired what experience the members of the society have had in locating glass by means of the X-ray. Dr. Nance had understood that the diamond throws no X-ray shadow, where ordinary glass does. The speaker said that he personally had had no experience in making such location.

President Tivnen said that Potter and others say that whether glass in the eye can be seen by the use of the X-ray depends upon the composition of the glass. Sometimes it becomes a medico-legal question of importance, whether an X-ray examination should have been made. In any event, it was a good safeguard. Generally speaking, the localization of glass in the eye by the X-ray is very disappointing.

Dr. Michael Goldenburg reported the case of a piece of steel or iron having entered the eye some ten years previously. He first saw the case about six years ago, when he noted the piece of metal lying flat upon the anterior surface of the iris. The metal could be plainly distinguished from the surrounding tissue by its stationary position and the contraction and dilatation of the iris around it. He saw the case again two months ago and there was absolutely no sign of the metal ever having been present. Whether it had become covered by the iris pigment or what the manner of its disappearance was, was unknown.

Dr. George F. Suker strongly deprecated any attempt to remove this small remaining splinter of glass, because this glass is undoubtedly lead free and non-irritating, and will not corrode. Also because the glass has become so well encapsulated and is immobile, and the place of its location also precludes mobility and traction upon it, and finally there is no evidence of irritation. The exudate is probably thoroughly organized by now. Unless symptoms of irritation should appear, interference should not be undertaken.

Dr. M. H. Worthington said he had a case of injury to the anterior surface of the cornea in a patient who was injured while playing tennis, by the lens of his glasses being struck and broken by a tennis ball. The speaker also referred to the case of a young man who had received cuts on his cornea from broken glass caused by a missile being thrown through the window of a street car on which he was riding, and the former case he had reported. He believed these cases to be extremely rare.

An Obscure Clinical Case.

Dr. M. H. Worthington stated that the case he had intended to present was one of probable vernal catarrh, but as this case had disappointed him he would report a case that was of interest to him on account of the numerous outbreaks of inflammation in a pair of diseased eyes, that had been under his observation for several years.

The patient, a young woman, was 15 years old in 1909, when he first saw her. She was anemic in appearance and of a strumous diathesis. Scars on the side of her neck showed the remains of suppurating cervical glands. Her mother was well and healthy, but her father was not strong, and at present is confined to his bed with pulmonary tuberculosis. At that time, she had a double keratitis, which was diagnosed as interstitial, but which he now believes to have been tubercular. After several months' treatment this quieted down, leaving nebulae and vision of 20/80 in each eye, but no remnants of vessels to be seen in the corneal tissue under the loupe.

The patient was not seen by him again until 1913, a though she stated that during that interval she had suffered recurrent attacks of keratitis in both eyes.

At this time she has several fresh spots in the corneal tissue and eyes highly inflamed.

In September, 1913, she had a fascicular keratitis in her right eye which was very slow in healing, and had to be cauterized before healing took place. In the following year she had phlyctenular keratitis in the left eye.

The patient was seen again in August, 1915, when she had an inflammation in the right eye, and a swelling or nodule at the temporal side of the cornea-scleral junction in the sclera, and a typical episcleritis. This condition has improved slowly.

The speaker inquired whether any of the members present had had any experience with guaiacol as a subconjunctival injection in these cases, in aqueous solution 1/100, stating that he was disposed to make use of it in this present case.

DISCUSSION. Dr. Tydings said that he had had no experience with guaiacol, but that there had been marked improvement in one case under his observation, of pyorrhea alveolaris with episcleritis, by the use of a proprietary preparation known as Aleresto-ipecac.

Dr. Worthington stated that he had examined the patient's teeth, and had referred her to her dentist to ascertain if she had any signs of pyorrhea, but he had reported back that he found nothing of that nature.

A Wassermann had been made some time ago but was negative.

Dr. Tydings responded that the dentists did not often recognize pyorrhea until it was too late to do anything for it. And that he would rather accept the diagnosis of a microscopist than a dentist.

Dr. Murray referred to the case of a man taking large doses of digitalis who developed purple vision. His vision became normal upon the cessation of the administration of digitalis, but upon resuming the digitalis the vision again became purple. Yellow vision caused by the use of santonin is not uncommon, however.

Intraocular Tumor.

Dr. Tydings reported the case (presenting the patient) of a young man, 20 years of age, whose father had died at the age of 48 of kidney trouble. The mother living and in good 'th. Two brothers and one sister are living. There is no disease history. On the twenty-eighth of July this patient came to the speaker's clinic blind in the left eye. There was slight perception of light. Examination showed neuro-retinitis, choroiditis, two patches and what seemed to be a sarcomatous growth in the superior temporal quadrant of the left eye. He was advised to enucleate. The speaker said he would have recommended enucleation if the growth had stood alone. There is considerable doubt as to the etiology. The urinary findings were negative; there was no appearance of inherited lues; the Wassermann test was negative. There is only a feeble response to the tuberculin test, there being a rise of one and a half degrees of temperature under the test. The nasal septum was deflected to the left. The left sphenoid was not healthy. The walls were denuded and the bone was exposed. The septum was straightened, and an opening was made up to the sphenoidal sinus, and the patient was put on active specific medication and tuberculin injections. There has been good progress, there is now 20/160 vision in this eye, and the other is perfectly normal.

The speaker stated that he believed this condition to be of tubercular origin.

DISCUSSION. Dr. W. A. Fisher said that he had seen this same patient about a month ago, and that the condition then was no more interesting than now, because there has been such marked improvement in the condition of the eye since he first saw him.

The condition tonight looks much like many cases of choroiditis we see. There is a pigmented choroidal spot just below the fovea centralis; above the fovea and a little toward the temporal side, there is an atrophic spot in the choroid. There is no swelling of the spot, but when he saw him with Dr. Tydings August 2, 1915, this white spot was ten times larger than it is tonight, and elevated from the normal part of the fundus about four diopters. It presented at that time a picture of a sarcoma of the choroid and reminded him of a picture he had for teaching that is copied from Frost's Atlas. He did not have any vision at that time and he believed it to be a sarcoma.

Dr. H. S. Gradle said that in this case at one time there was probably some interference with the circulation of this area, with subretinal or subchoroidal hemorrhages, and a collection of serum. An autolytic process involving the retina and the choroid probably followed. Now the condition is one of atrophic retina, with the sclera showing through. There is still some swelling of the surrounding area. We cannot tell whether the central area is swollen, but elsewhere there is edema. The condition now is what might be designated as a hole in the retina and choroid due to autolysis from the subretinal collection of serum.

Dr. Michael Goldenburg said that in view of so much destruction of the retina and choroid, and so little pigment epithelium or choroidal pigment being present, one would be led to think of what von Michel said, that where there is great destruction of tissue, and with little or no pigmentation and a few changes in the vessel walls, the condition can be safely diagnosed as tubercular. In view of the fact that Dr. Tydings' injection of tuberculin was followed by a rise of one and a half degrees, this would seem to be good grounds for regarding the condition as tubercular.

In closing the discussion, Dr. Tydings said he believed the condition to be tubercular, but at the same time he had not felt like abandoning specific treatment. The patient began to complain on the twenty-fourth of July, and the speaker saw the case four days afterwards. The sudden blindness was ascribed by the speaker to the swollen disc. The speaker declared himself to be open to suggestions as to what the condition is.

A Double West Operation.

Dr. John A. Pratt, of Aurora: While in Seattle, last July, I demonstrated the West operation on the patient for a number of physicians. The patient's brother, who is a physician, operated the other side the following day. The patient received four or five treatments, and then was allowed to return to his home on the farm about one hundred and fifty miles distant.

The results of the operation were seemingly good, so good that three weeks ago the patient was sent to Dr. Fisher of Chicago for a cataract operation.

Dr. Fisher found on microscopical examination that pus was present, and hearing from the patient that I had performed the West operation on him, sent him out to Aurora to have him cleaned up. After three weeks' treatment the eyes seem clean and the tears are carried off, but upon microscopical examination pus is still present in the secretions of the eye. The question is whether to send this patient back to have the sac trouble cleaned up, if possible, or destroy the sac, and perform the operation for cataract. The patient has only one eye and is thirty-five years old.

Dr. Pratt, in answer to a question, said that there was no pus to be seen by the eye, and that the tears drained into the nose.

Dr. W. A. Fisher, in discussing the report of Dr. Pratt, said that this patient has only one eye, has 20/120 vision, and a cataractous lens and had been referred to the speaker for an intracapsular cataract operation.

He had an intransal operation to drain the tear sac and there was pus in the conjunctival sac one month ago when he came for the cataract operation. He has since received daily treatment and today pus is found in the conjunctival sac. The nasal operation as performed would be considered a success providing the lens was not opaque, but the question of infection in the only eye he has is a very important one.

He believes the case should have more treatment and that the operation should not be censured, because a tear sac operation is not always successful.

He has seen many operations of this kind presented to this society lately and Drs. Pratt and Clarke have given excellent papers upon this operation, and he believes we would all be benefited by looking further into the subject rather than censuring it.

Dr. Pratt, in answer to a question, said that there was very little discharge, and that the tears escape.

President Tivnen inquired what would be the objection to tying off the canaliculus.

Dr. Pratt responded that he saw no objection to it, although it is slit clear up now. The sac may, however, be injected with trichloracetic acid.

President Tivnen said that he felt the removal of the sac would be justified.

Dr. Tydings said that he had had a similar case, where the pus sac did not clear up for three or four months. The pneumococcus and the streptococcus predominated. The sac was extirpated.

Dr. Goldenburg said that he had seen several of these cases in Berlin which were performed by the originators of the operation and were considered beautiful results. They were just as good as in this case; but the most serious phase of a dacryocystitis is the pus that is retained and the virulence of that pus, and the danger to the eye of a serpiginous ulcer or an acute phlegmon, and as long as there is any pus there at all, there is always that danger present. The control of the epiphora is not a serious matter at any time, but the serious matter is the control of the pus. The speaker said he would strongly suggest that the sac be removed according to the method of Dr. Mueller of Vienna.

Paul Guilford,
Secretary.

PITTSBURGH OPHTHALMOLOGICAL SOCIETY.

E. B. HECKEL, M. D., *Chairman*
October 11th, 1915.

Electric Burn.

Dr. E. A. Weisser presented a case, a male of 50, of electric burn of the face and chest, both eyes having been involved. A current of 13,000 volts had caused the injury. The injury had occurred in April, 1910, and the left eye had been burned white and sloughed, so that it had been necessary to enucleate the stump in February, 1911: the right eye had also been burned white but the cornea cleared in a few days; the lens had become cataractous at once. In February, 1911, the lens was extracted and shortly after a flap was taken from the forehead and a new nose constructed. Vision is now 6/12 and the cosmetic result is good.

DISCUSSION. Dr. Stieren asked if a scotoma was present; he said that in a recent case of exposure to an electric flash he had found an annular scotoma present.

Dr. Heckel was of the opinion that there must have been damage to the retina as a whole and that therefore, such scotoma would probably not be present. He thought that the cataract had probably been due to the effect of direct heat upon the lens.

Iridotasis for Chronic Glaucoma.

Dr. Edward Stieren exhibited two case of glaucoma upon whom iridotasis had been performed. Case 1. Male, age 66, retired manufacturer. Both eyes were affected with simple chronic glaucoma; the patient had been under observation six months. Eserin and regulation of habits had failed to check the process. In March, 1915, the conditions had been as follows:

O. D. with + 2.00 sph. = 6/8 +.
O. S. with + 2.00 sph. = 6/25 eccentrically.

Tension O. D. 50 mm. O.S. 57 mm. Left field contracted to within 2° of the fixation point below, 30° above and from 20° to 30° laterally. Right field contracted to 10° on the 120 meridian, 30° above and below, and 80° outwards. In three months the field of the left eye had become rapidly smaller and the vision had been reduced to 6/50, eccentrically. The right field had remained about the same.

Irodotasis was performed on the left eye July 19th. On August 10th, the left eye had recovered to 60° below, 80° outwards, 30° above and 20° nasally; vision has improved to 6/25, eccentrically; tension 22 mm.

(Continued)

BOARD OF EXAMINERS ON OPHTHALMOLOGY.

The minutes of the meeting of the Joint Board of Examiners on Ophthalmology, appointed upon action of the three societies, American Ophthalmological Society, Section on Ophthalmology of the American Medical Association and the American Academy of Ophthalmology and Oto-Laryngology.

The meeting was held at the University Club in Chicago, Thursday afternoon, October 7, 1915. The board of examiners consisted of the following appointees representing:

Section on Ophthalmology of the A. M. A.: Dr. Edward Jackson, three years; Dr. Casey A. Wood, two years; Dr. E. C. Ellett, one year.

American Academy of Ophthalmology and Oto-Laryngology: Dr. Wendell Reber, three years; Dr. Walter B. Lancaster, two years; Dr. Frank C. Todd, one year.

American Ophthalmological Society: Dr. Miles Standish, three years: Dr. Alexander Duane, two years; Dr. Wm. H. Wilder, one year.

There were present at this meeting Drs. Edward Jackson, Miles Standish, William H. Wilder, E. C. Ellett, Walter B. Lancaster and Frank C. Todd. Upon motion it was

Voted that Dr. Jackson be made temporary chairman. Upon motion it was

Voted that Dr. Todd be made temporary secretary.

Dr. Jackson then read a letter from Dr. Duane, making suggestions regarding a proposed organization and its plan of work. These suggestions were discussed and it was

Voted that a committee on organization and financial support be appointed. Drs. Jackson, Ellett and Duane were appointed.

It was suggested, among other things, that the support should come largely from candidates, but it was thought a part of the initial support might come from the three societies represented.

It was agreed that mature consideration should be given all questions and that the various committees, including the organization committee, should report next May, 1916, at Washington, D. C., at the time of the meeting of Congress, and

It was the consensus of opinion that a permanent organization could be effected at that time, and that the date of the beginning of appointments should begin with the date of the beginning of the permanent organization. Upon motion it was

Voted that a committee on the question of requirements of candidates for examination be appointed by the chair. Those appointed were Drs. Standish, Wilder and Todd. This question was informally discussed, and Dr. Wilder was requested to consult with Dr. Franklin H. Martin, secretary of the American College of Surgeons to secure such suggestions and advice as Dr. Martin might be able to give him, based on his experience in the American College of Surgeons. Dr. Standish, the chairman of this committee, requested its members to send to him their suggestions, which would be forwarded to the various members of the subcommittees. It was

Voted that a committee on examination concerning "regulations, places, standards, methods, time, etc." be appointed. Drs. Lancaster, Reber and Wood were appointed. An informal discussion upon this question took place. The subcommittees were instructed to have their full report ready for the next meeting.

The meeting adjourned to meet on Monday, May 8th, in Washington, D. C.

Dear Dr. Jackson:

In the short time before this answer to your letter must go in order to reach you by October 7th, I do not feel that I can give the important matters concerned the consideration they require. Speaking in a general way, I should say that your letter covers the ground very well, and prepares the way for discussion and correspondence that will lead to a satisfactory working system.

A few suggestions occur to me:

1. I suppose our Board ought to have a name. Perhaps "National Board of Ophthalmic Examiners," or better, "American Board of Ophthalmic Examiners," would do.

2. As to permanent organization. We should, of course, have a chairman, and I have no doubt that the other members of the Committee will agree with me that you are the one to fill the place. Offhand, I should say it would be well to make a by-law that the chairman shall serve for at least two years (personally I should prefer three). The chairman, I think, should be ex-officio member of all temporary and standing committees, except perhaps the Committee on Disbursement and Audit.

I suppose we must also have a Secretary and a Treasurer, or better, a Secretary-Treasurer, who shall make and keep the minutes of the meetings and keep the other official records receive and file all examination reports and take charge of and disburse, under the general directions of the Board or of the Committee on Disbursements and Audit, all moneys received. These two officers should have adequately paid clerical assistance.

The plan of organization should provide for an annual meeting for the election of officers. This might be made coincident with the meeting of the American Medical Association.

3. When organized, we should have standing committees about as follows: a. On requirements and standards. Function: To consider proposed changes in the requirements, and from time to time recommend to the full Board the changes that they approve of. It should also, according to our circular, "prepare lists of medical schools, hospitals and private instructors recognized as competent to give the required instruction in ophthalmology." b. On examinations. To pass upon credentials and qualifications of candidates, and to receive reports of the examinations and pass finally upon them. c. On disbursement and audit.

These committees would consist of three each, to be divided into classes in usual way.

4. As to rules. A temporary committee on rules appointed at this meeting should adopt a set of by-laws to be passed on by the full committee meeting in May.

5. On financial support. A provisional committee on

finance should be appointed at this meeting, and report in May to estimate probable expenses, fix the fees required of examinees and determine what, if any, additional amount should be requested from the three organizations appointed members of the Board. In estimating the cost, this committee would have to consider:

a. The clerical expenses of the Chairman and Secretary-Treasurer.

b. Fees given to examiners not members of the committee. (I take it that we can hardly ask men not connected with the committee to serve as examiners for nothing.)

c. Expenses of stationery, advertising, printing, etc.

6. As to requirements. A temporary committee should be appointed on this subject, to report in May. Such committee should take into account not only the qualifications that we should require of candidates, but also the sort of qualifications we should require of medical schools, hospitals and private instructors, in order to make them, as our circular says, "recognized as competent to give the required instruction."

7. As to conduct of examinations. A committee should be appointed now to report on this subject to the full Board in May.

8. Pending the adoption of a permanent organization, to be effected after the adoption of the by-laws, which are to be drafted by the Committee on Rules, we should have a temporary organization appointed at the meeting, to consist of a temporary chairman and secretary, who shall hold office until the permanent officers are appointed.

I wish you every success in the meeting, and am only sorry that I cannot be with you.

Very sincerely,

Alexander Duane.

THE JANUARY NUMBER.

Next month The Ophthalmic Record will conclude the Symposium on the Relation of General Disease to the Eye. The January number will be devoted exclusively to the subject of Ocular Tuberculosis. There will be articles by Edward Jackson, Joseph McCool, Wm. Campbell Posey and William Gamble, the last named presenting also an illustration in colors of Miliary Tuberculosis of the Eye.

NEWS AND NOTES.

Personals and items of interest should be sent to Dr. Emory Hill, 30 North Michigan avenue, Chicago, Ill.

As these columns go to press on the 15th of the month previous to publication, contributors will kindly send in their items before that date.

Dr. J. A. Stucky of Lexington, Ky., is at home again after a rest in Battle Creek, Michigan.

By advice of the Director of Health a public clinic is to be established in Kansas City.

Dr. Allison T. Wanamaker of Seattle was married to Miss Helen Allmond of that city on October 20.

Dr. Joseph A. Andrews of Indian Harbor, Labrador, spent his vacation in the United States in October.

Dr. William G. Kennon of Nashville was married to Miss Elizabeth Thompson of that city on October 20.

Dr. Joseph A. White of Richmond was elected president of the Medical Society of Virginia at the last annual meeting.

Dr. Alfred C. Bartholomew of Van Wert, Ohio, was married to Miss Ruth Inez McConahy of the same city on October 27.

Dr. Harry Friedenwald of Baltimore is a member of the executive committee of the faculty of medicine in the University of Maryland.

Dr. H. C. Parker, formerly of Indianapolis, has completed a six months' postgraduate course in Boston and is now located in Dubuque, Iowa.

For Sale—A Zeiss microscope, complete with oil immersion, selected in Vienna by a prominent pathologist for the present owner. Will sell for Vienna cost. Address C/O OPHTHALMIC RECORD.

Dr. Thomas McDavitt of St. Paul was elected secretary of the Minnesota Medical Society at the meeting in Rochester, October 1.

Dr. Robert L. Nourse was elected one of the Journal trustees at the meeting of the Idaho State Medical Association at Lewiston, October 13-15.

At a recent meeting of the Tri-State Medical Society of Illinois, Iowa and Missouri, Dr. A. B. Middleton, of Pontiac, Ill., was elected president.

Proceedings have been started in Pennsylvania to test the legality of Gov. Brumbaugh's veto of the bill creating a separate board to license optometrists.

A new California law requires that cases of ophthalmia neonatorum be reported within 24 hours. On the birth certificate is a query as to the use of a prophylactic.

Dr. Charles P. Frantz of Burlington, Iowa, is one of the vice-presidents of the American Association of Railway Surgeons, which met in Chicago, October 12-15.

Dr. R. A. Reeve of Toronto recently spoke in behalf of the Ontario Medical Association before the Ontario Medical Commission in opposition to the licensing of chiropractors.

Surgeon General G. A. S. Ryerson was guest of honor at a banquet of the Aesculapian Club, Toronto, on October 14, where he recounted the experiences of his recent trip to France.

Professor Schmidt-Rimpler of Halle, Germany, is dead at the age of 77. He was a pupil and associate of von Graefe, and was especially interested in the question of myopia in children.

It is reported that 100 workmen engaged in shipping wood alcohol from Nijni-Novgorod, Russia, opened a barrel and drank the contents, with the result that 20 are dead and the rest seriously ill.

The Governor of Alabama has vetoed the optometry bill passed by the state legislature. By some strange misunderstanding this bill seems to have been endorsed by the state medical society.

A. I. Lawbaugh of Calumet was appointed delegate to the American Medical Association and Dr. J. R. Rogers of Grand Rapids a member of a committee to investigate the sanitary condition of public eating places.

The following bequests have been received:

$5,000 to the Brooklyn Eye and Ear Hospital.
$2,000 to the Episcopal Eye, Ear and Throat Hospital of Washington, D. C.
$5,000 to the New York Association for the Blind.

At a meeting of the Minnesota Academy of Ophthalmology and Oto-Laryngology held in St. Paul on October 8, the following officers were elected: President, Dr. Thomas McDavitt of St. Paul; vice-presidents, Dr. John M. Robinson of Duluth and John A. Watson of Minneapolis; secretary-treasurer, Dr. John Morse of Minneapolis.

The following deaths among ophthalmologists are announced:

Dr. Homer G. Newton of Shelburne, N. Y., aged 79.
Dr. Edmund C. Rivers, of Denver, aged 57.
Dr. Ira M. Martin, of Green Bay, Wis., aged 49.
Dr. Samuel G. Todd of Oshkosh, Wis., aged 46.
Dr. Benjamin F. Hall of Rock Island, Ill., aged 62.
Dr. Stuart M. Smith of Port Huron, Mich., aged 64.
Dr. George C. Burnley, of Lock Haven, Pa., aged 49.

A news note in the November number of THE OPHTHALMIC RECORD stated that J. F. Barnhill, of Indianapolis, was elected chairman, and E. M. Shanklin, of Hammond, secretary of the Eye, Ear, Nose and Throat Section of the Indiana Medical Society. This note was an error. The new officers of the Section on Ophthalmology and Oto-Laryngology of the Indiana State Medical Association elected at the recent session held in Indianapolis (September 23 and 24, 1915), are as follows: Chairman, Albert E. Bulson, Jr., Fort Wayne; vice-chairman, Lafayette Page, Indianapolis, and secretary, E. M. Shanklin, Hammond.

CHICAGO EYE CLINICS.

Hour.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
9 A.M.	Richard S. Pattillo (P.-G.) G. W. Mahoney (Poli.) R. B. Stephenson (P.-G.) Carl Wagner (E.E.N.T.)	*Geo. F. Suker (P.-G.) C. H. Francis (Poli.) A. Duncan (P.-G.) A. G. Wippern (E.E.N.T.)	W. F. Coleman (P.-G.) S. M. Hager (Poli.) H. N. Lyon (P.-G.) Carl Wagner (E.E.N.T.)	G. W. Mahoney (Poli.) Rich'd S. Pattillo (P.-G.) R. B. Stephenson (P.-G.) A. G. Wippern (E.E.N.T.)	C. H. Francis (Poli.) R. B. Stephenson (P.-G.) J. A. Cavanaugh (E. E. N. T.)	S. M. Hager (Poli.) C. W. Hawley (P.-G.) H. J. Morlan (P.-G.) A. G. Wippern (E.E.N.T.)
10 A.M.	Brown Pusey (N.W.U.) Geo. T. Jordan (N.W.U.) Robert Blue (N.W.U.) Every day, 10-12 A. M. Harry Gradle (E.E.N.T.)	J. R. Hoffman (E.E.N.T.)	Harry Gradle (E.E.N.T.)	J. R. Hoffman (E.E.N.T.)	Harry Gradle (E.E.N.T.)	J. R. Hoffman (E.E.N.T.)
1 P.M.	M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) Emily Selby (Inf.) *H. W. Woodruff (Inf.) *Oscar Dodd (Inf.) C. A. Leenheer (Inf.) D. W. Eiss (Inf.) E. R. Cressley (Inf.) C. C. Clement (Inf.) E. V. L. Brown (County) and Geo. F. Suker (County) Daily, 2:30 P. M. W. A. Fisher (E.E.N.T.)	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) E. K. Findlay (Inf.) Wm. E. Gamble (Inf.) J. B. Loring (Inf.) S. L. McCreight (C.C.S.) Robt. Von der Heydt (Inf.) L. G. Hoffmann (Inf.) A. P. Hunneman (Inf.) M. Goldenberg (Inf.) Francis Lane (Inf.) H. Walker (Inf.) W. A. Fisher (E.E.N.T.)	M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) Emily Selby (Inf.) *H. W. Woodruff (Inf. *Oscar Dodd (Inf.) C. A. Leenheer (Inf.) D. W. Eiss (Inf.) E. R. Cressley (Inf.) C. C. Clement (Inf.) Oliver Tydings (E. E. N. T.)	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) *Frank Allport (St. Luke's) *Frank Brawley (St. Luke's) E. K. Findlay (Inf.) Wm. E. Gamble (Inf.) *Paul Guilford (St. Luke's) *Casey Wood (St. Luke's) *T. A. Woodruff (St. Luke's) J. B. Loring, (Inf.) S. L. McCreight (C.C.S.) Robt. Von der Heydt (Inf.) L. G. Hoffman (Inf.) A. P. Hunneman (Inf.) M. Goldenberg (Inf.) Francis Lane (Inf.) H. Walker (Inf.) W. A. Fisher (E.E.N.T.)	M. H. Lebensohn (Inf.) Willis O. Nance (Inf.) D. C. Orcutt (Inf.) N. E. Remmen (Inf.) Emily Selby (Inf.) *Oscar Dodd (Inf.) C. A. Leenheer (Inf.) D. W. Eiss (Inf.) E. R. Cressley (Inf.) C. C. Clement (Inf.) H. W. Woodruff (Inf.) W. A. Fisher (E.E.N.T.)	*Chas. H. Beard (Inf.) W. Allen Barr (Inf.) E. K. Findlay (Inf.) Wm. E. Gamble (Inf.) J. B. Loring (Inf.) S. L. McCreight (C.C.S.) Robt. Von der Heydt (Inf.) L. G. Hoffman (Inf.) A. P. Hunneman (Inf.) M. Goldenberg (Inf.) Francis Lane (Inf.) H. Walker (Inf.) Oliver Tydings (E. E. N. T.)
3 P.M.	*Wm. E. Gamble (U. of I.) Wm. H. Wilder (Rush) H. S. Gradle Daily 3-5 (E. M. D.)	R. J. Tivnen (M. H.)	W. Allen Barr (C.C.S.) *Wm. E. Gamble (U. of I.)	Wm. H. Wilder (Rush) R. J. Tivnen (M. H.)	W. Allen Barr (C.C.S.)	Geo. F. Suker (P. G.) 2-5 H. Cuthbertson A. Duncan
4 P.M.	W. F. Coleman (P.-G.) H. N. Lyon (P.-G.) 2-5	C. W. Hawley (P.-G.) 2-5 J. F. Campbell (P.-G.) H. J. Morlan (P.-G.)	J. B. Loring (U. of I.) E. K. Findlay (U. of I.) G. F. Suker (P.-G.) 2-5 H. Cuthbertson (P.-G.)	C. W. Hawley (P.-G.) J. F. Campbell (P.-G.) H. J. Morlan (P.-G.)	W. F. Coleman (P.-G.) 2-5 H. N. Lyon (P.-G.)	

*Special operative eye clinic.

ABBREVIATIONS:

C. C. S.: Chicago Clinical School, 1844 W. Harrison Street.

E. M. D.: Emanuel Mandel Dispensary, 1012 Maxwell St.

County: Cook County Hospital, W. Harrison and Honore Streets.

Inf.: Illinois Charitable Eye and Ear Infirmary, Peoria and Adams Streets.

M. H.: Mercy Hospital.

Poli.: Chicago Policlinic and Hospital, 221 W. Chicago Avenue.

P.-G.: Post-Graduate Medical School of Chicago, 2400 Dearborn Street.

N. W. U.: Northwestern University, 2431 Dearborn Street.

Rush: Rush Medical College, W. Harrison and Wood Streets.

St. Luke's: St. Luke's Hospital, 1416 Indiana Avenue.

U. of I.: College of Medicine, University of Illinois, Congress and Lincoln Streets.

RE
1
O4
v.24

The Ophthalmic record

Biological
& Medical
Serials

PLEASE DO NOT REMOVE
CARDS OR SLIPS FROM THIS POCKET

UNIVERSITY OF TORONTO LIBRARY